FLORIDA® WILDLIFE

July-August 1985

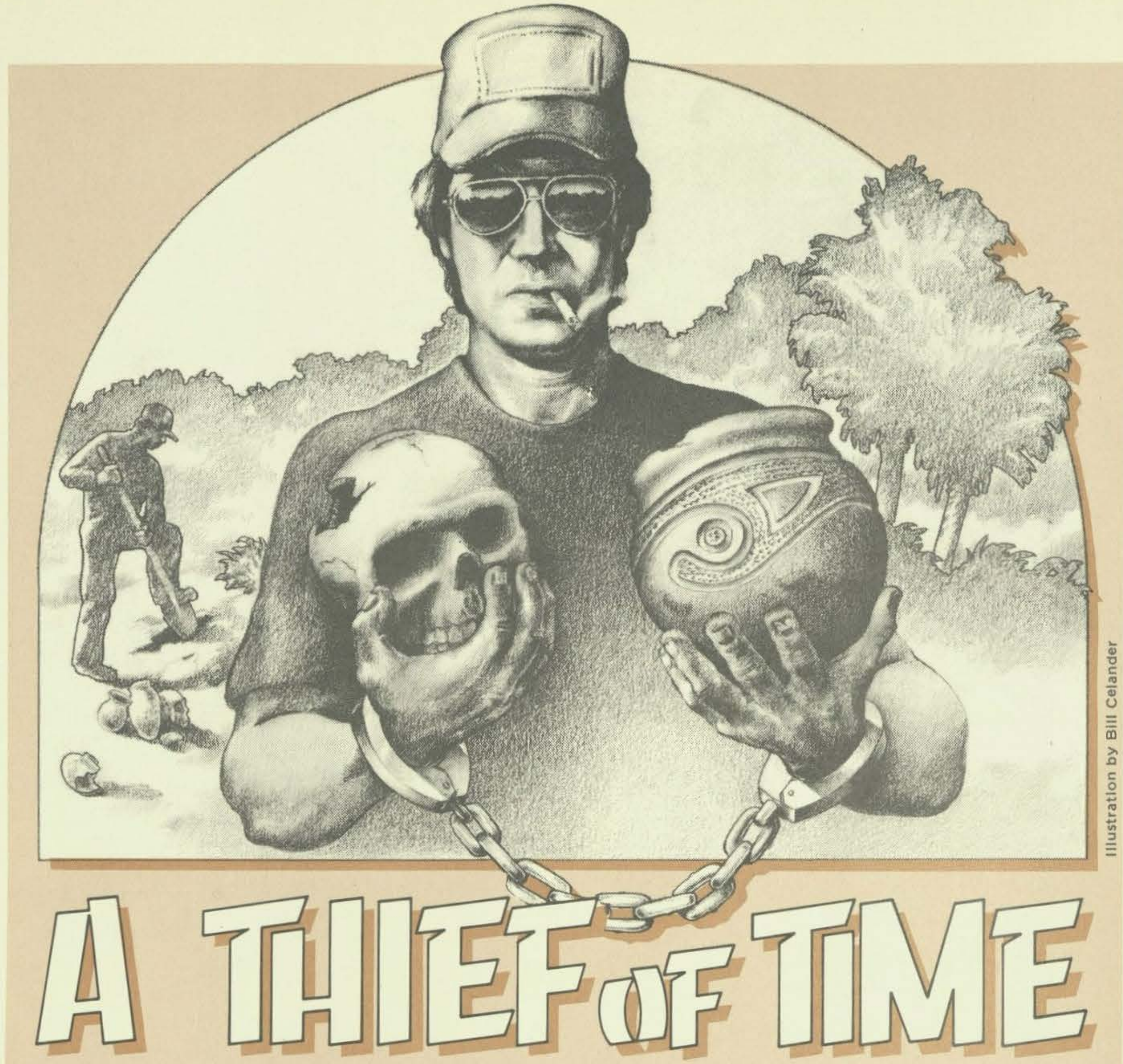

Illustration by Bill Celander

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FLORIDA® WILDLIFE

Dedicated to the appreciation and enjoyment of our wildlife heritage, and to a fuller understanding of efforts directed toward the protection, restoration, enhancement and wise use of our natural resources.

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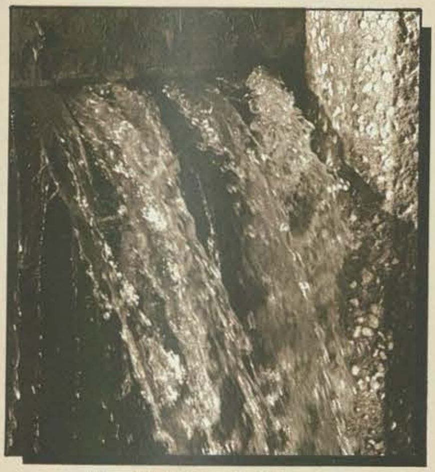

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THE COVERS

The gray fox shown on our cover is from a scratchboard original by Tampa artist Gregg Murray. See Page 43 to find out how you can own a beautiful, signed and numbered limited edition reproduction of his original.

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My First Hurricane

By Patricia M. Dear

"You'll be floating on the sofa with the baby, a beverage, and a sports magazine!"

"It's what?" I asked my dear husband as I telephoned him at work.

"It's hurricane season!" he said again.

As a Buffalo, New York native, I found this a bit bizarre.

"You mean it has its own designated time of year?" I inquired curiously.

"Yep," was his relaxed reply. "From June through November."

A hurricane to me was simply a very strong wind. I never dreamed it could have such a good bit of pomp and circumstance. Terms such as *storm surge*, *beach erosion* and *tidal waves* were certain strangers to me. Why, the thing even has its own *eye*, he explained. What a ghastly creature it must be, I thought.

"So you say they have hurricane parties?" I asked as he told me more. I pictured Floridians wearing pioneer caps, hand in hand, dancing and frolicking around and around. I had images of an accordian player misting the air with the cadences of old songs like "*My Gal Camille*," "*The Day They Knocked Old Arthur Down*," "*Diana Won't You Blow*," "*Where Have All The Jetties Gone*" and "*Evacuation Can Be Fun*." I visualized the boaters in a distant corner together, harmoniously singing, "*Row, Row, Row Your House, Gently Down The Stream*."

But, listening to the broadcast news later, I became extremely tense. After listening to the neighbors I became frantic. One elderly man described how "trees taller than the sky toppled over in an instant." He told me how, "that ol' hurricane whipped through here, leaving death and destruction everywhere in its path, and me knee-deep in my flooded Florida room!"

When my poor, tired hubby came home from work, he had barely parked the truck before I came running to him, arms waving and child in tow (bundled warmly). My son was dragging an array of his most treasured toys, while I clutched him for dear life.

"Should we tie down the lawn furniture?" I asked him. "Stock the attic? Fill the gas tank? Buy more flood insurance?"

He, being quite used to me by then, calmly kissed my forehead, said hello, hugged the baby (while removing his quilt blanket and woolen snuggies) and asked, "What's for dinner?"

I mused, "I know your life revolves around beef stroganoff, but we've got to prepare! When good ol' what's his name (our local weatherman) guesses where the storm will strike, it could very well be time for a quick exit."

Hugging my shoulders, he calmly advised me the storm was 250 miles away, and said we would have plenty of information and time in the extreme chance a problem should arise.

"Typical, typical, typical," I retorted. "You know, you should do antiperspirant commercials!"

"I can see it now, I'll be swimming around trying to save the China, and you'll be floating on the sofa with the baby, a beverage and a sports magazine!"

Through dinner, the *tap, tap, tap*, of my too-upset-to-eat fingers on the table didn't seem to bother anybody. Dad and son enjoyed the usual amount of good-humored conversation. I decided it was up to me to boldly accept my mission and brave the trail alone, just as so many of our great predecessors had, like Joan of Arc.

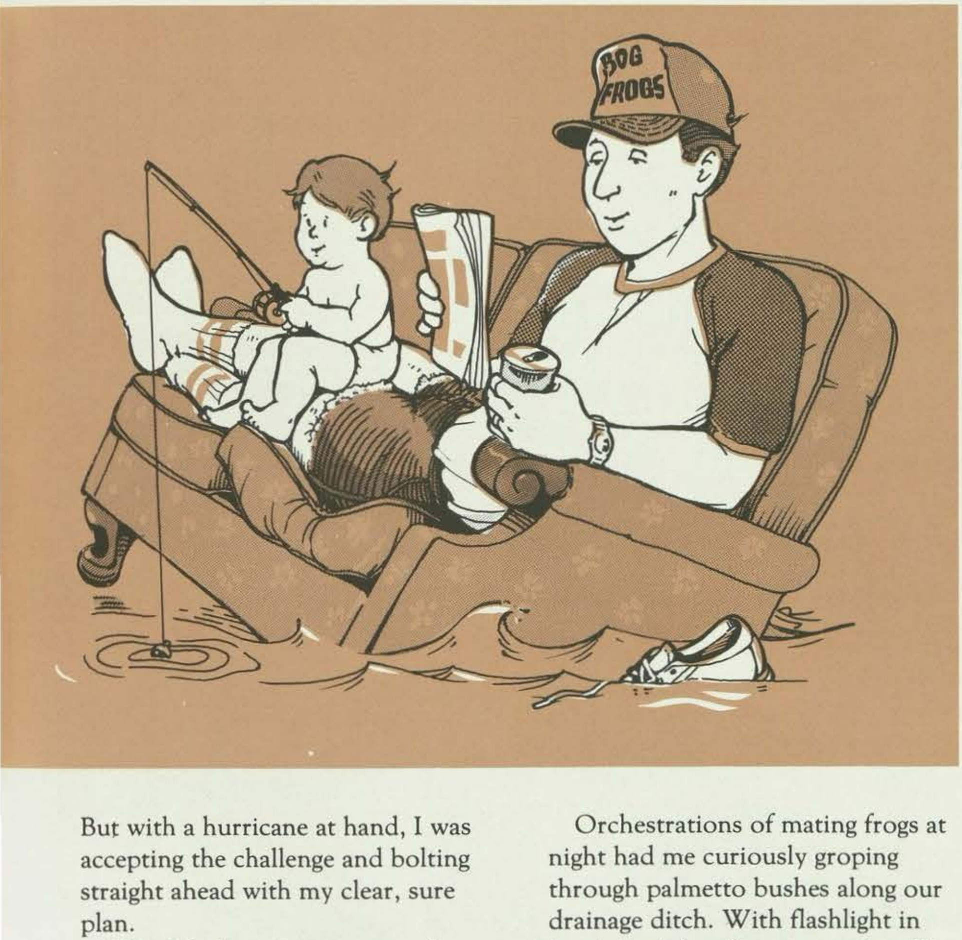
My plan included a master list of priorities. I planned to construct a platform upon which our furniture could rest, secured by clothesline to something—iron bars cemented to the floor perhaps. The priorities would include stocking the camper with canned goods, jugs of water, first aid supplies, all the family photographs and what I term my *items of pack-rat-ery*--every birthday card, school paper, letter or other treasure I have ever had.

"First Priority: Remember to put the hitch on the camper," I wrote on the list.

Then I planned to put the dog in the attic and just as quickly, decided that wouldn't be proper. Even though he barks incessantly whenever the spirit moves him and slobbers all over the baby, he is a living creature and occasionally endearing. No, the attic had to be used for whatever clothing and other items of cloth we would have to leave. If the roof blew off, I knew they would be lost anyway.

Two days later, my plan was neatly hand-printed and organized on index cards. No stone had been left unturned. Every possible occurence had been anticipated. Every single item was inventoried and secured. How far I had advanced in only two days, I thought proudly.

My pride beamed on my new found adjustment to Florida living, as I remembered that a mere two years before, upon my first arrival to the Sunshine State, I had felt lost.



But with a hurricane at hand, I was accepting the challenge and bolting straight ahead with my clear, sure plan.

Why I had not been aware of hurricane season before, I do not know. We arrived in July the first year. It was my first jaunt away from Buffalo, where I was comfortable in whiteouts and blizzards. In my home town, the first thought in a blizzard is whether they will close the schools to allow hours of sledding and snowman building. I can wield a mean snowball, I'll have you know.

Anyway, the heat and humidity of July in Florida was enough to make this newcomer nauseous. Coupled with expecting the birth of our son the following March, hurricane season passed by me as I lay in bed eating salted crackers.

The next year, we settled in another home with our new baby and recovered from the "Land of Real Estate." But then soon after, hurricane season was upon us again. Now, to the experienced Floridian, this may sound a bit strange, but that was also the year I discovered biology.

Orchestrations of mating frogs at night had me curiously groping through palmetto bushes along our drainage ditch. With flashlight in hand, I tried to figure out what all the noise was. As I prodded and searched in the rain, my stupid dog kept shaking fur and water all over the place. Every time I'd catch a glimpse of this strange new-to-me phenomenon—"frog bloating"—the dog would scare the frogs away.

I also experienced my first sighting of a Florida spider. It was out back crawling, parading across my hardware. As I ran to find something to defend myself with, my knight in shining armor came to rescue and skewered the beast on the dog's spiral stake-out chain holder. With a pounding heart, I called my mother to report how this strain of the woolly mammoth had scared the daylights out of her baby.

My first snake slithered up our fence that year too.

While I was relaxing on a lawn chair one tropical afternoon, with a tall glass of iced tea, an extremely longnecked, swan-like, walking *bird* slinked by my head. Gracefully, it placed one poised foot, flipper, paw or whatever in front of the other. I vividly recall how our eyes met, as if to say "most charmed to make your acquaintence."

That was also the year my husband took me back to visit New York. I suppose that got to him too—Buffalo's nightly rantings, exhaust fumes, city traffic and downtown. Dear ol' downtown Buffalo; frenzied, grim-faced, freezing crowds; seeing your breath in the cold air; hustle and bustle; wind chill! How I longed for wind chill.

Perhaps my homesickness for New York started when I stuck my earmuffed head into the freezer one day and refused to ever come out again. Or could it have been the monthly $200 long-distance phone bills? Anyway, two weeks back in New York gave me strength to come back to our home in Florida.

So, there I was, far from Buffalo, ready for the big hurricane. I had thoroughly researched my subject and I knew my enemy well. Then, without warning, the only flaw in my disaster plan, the only unanticipated possibility happened. My dreaded hurricane shrunk! Shrunk?

"YOU MEAN TO TELL ME THAT IT SURRENDERED! Without a fight! The terrible monster had become nothing?" I found myself saying.

My battle stations were manned, my fort was at the ready, but for...no, I can't say it...a tropical breeze?

Well, so much for my hurricane. "What do you mean there's an alligator on the lawn?" ☐

Footnotes To History

By Ned Potter

It wasn't a very pleasant feeling to be returning to camp without any game. I was particularly distraught since I didn't know how my hunting buddies had fared. If they had scored, then I knew my *zip* would generate many jabs for a long time. The thought of it made my bow heavier with each step. I guess every hunter tries to figure out what went wrong when he gets skunked. I know I do. I also know you can't get something every time you get out in the woods.

I was running it all through my mind as I walked alone, trying to figure out what I'd done wrong. My blind had been built the previous summer. The boards were well weathered and the surrounding palmetto fans left few spots where a turkey could see inside, especially from some distance away. I had hardly moved for over three hours, and what little I had moved was only to chirp intermittently on my turkey caller.

The blind was in a good location. I was sure of that because I had bagged game there on two other occasions. In fact, I'd heard turkeys fly up to roost over a nearby cypress swamp the night before. Everything had seemed so right, yet, dejected, I finally had gathered my things, circled the swamp and followed an obscure little game trail back to Old Military Trail which led back to camp.

The seemingly innocuous dirt road runs roughly parallel to the East Coast of Florida and is some 30 miles inland at that point. It is indistinguishable from hundreds of other dirt roads I've seen, but unlike most of them, this one has a name and a somewhat unique place in American history. Now called the Old Military Trail by local folks, it is a small segment of what once was the "Lauderdale Trail." About the time of the Florida War (sometimes called the Second Indian War), Maj. William Lauderdale and some of his contemporaries built many stockade forts and supply depots throughout Florida. These were interconnected by a number of trails, including the Lauderdale Trail.

Many of the trails had to be cut out of the primitive, untouched land; others, no doubt, had been Indian trails or previously existing game trails made wide enough to accommodate a column of soldiers and their wagons. Reports of the commanders confirmed the men frequently had to construct causeways and bridges through swamps and sloughs to avoid having to go around them.

The trail, named in honor of Maj. Lauderdale, began at Ft. Dallas (now metropolitan Miami). It was generally inland along the East Coast to Ft. Jupiter. Proceeding northwesterly from there, it eventually intersected with another north-south route, the Ft. Pierce Trail. At the junction of the two trails, a stockade fort had been constructed. It was called Ft. Lloyd and is now the site of the city of Okeechobee. ▷

The Lauderdale Trail then went in a northerly direction to Ft. Drum. There, it crossed an east-west trail that connected Ft. Vinton on the East Coast (where Vero Beach is now) with Ft. Brook at Tampa Bay. This trail connecting both coasts was known as the Capron Trail. From Ft. Drum, the Lauderdale Trail meandered northeasterly to Ft. Taylor on the west bank of Lake Windner. This northern terminus was just a few miles south of the current location of Cocoa. It was on this last segment of the Lauderdale Trail which I was walking.

Fort Drum was several leagues behind me then, as I tried to imagine the hardships of a forced march to Ft. Taylor. Word had been passed down to soldiers of the past that they might make contact with Chief Alligator here at any time, with a warning, no doubt, that the chief and his men were desperate for a victory. That the Old Military Trail looked very much then as it does now, I had no doubt, but a weary soldier plodding along, head drooped from weariness, would have seen the deep ruts of wagon wheels where I observed tire tracks. Between those ruts would have been footprints of horses, mules or oxen—the beasts of burden of the times. I, too, saw similar marks left by some modern day cattleman's horse as he rounded up his steers, but I did not see any bare footprints of retreating Seminoles as my forebearers might have.

A path through the countryside is just as important to the indigenous wildlife as it is to man. It's probably a safe conjecture to say that fauna, following daily routines, made most of the trails first and that humans took advantage of them later.

With little or no threat or danger to limit traffic, an existing path tends to become harder packed than the surrounding terrain. There is less obstruction on a path, and it is part of the master plan for trails that each set of tracks ensures another set of tracks will follow. I'd walked the Old Military Trail many times after a rain and had seen where a great variety of wildlife had followed it. Frequent users are deer, wild hogs, raccoons, opossums, rabbits, armadillos and a variety of birds and reptiles.

One of the first things we do when we arrive at camp is to check the road for tracks. It tells us what's been in the area recently and lets us vicariously experience their presence in case we don't get to actually see them. I don't think we've ever checked for signs and not seen bobcat tracks. I think these cats must be on night patrol every night so they can pick up all the stray rabbits.

I've walked the Old Military Trail many times after a rain...frequent users are deer, wild hogs, racoons, opossums, rabbits and a variety of birds and reptiles.

Another comforting reflection I've often had is that the trails which we follow today must surely be passing the same panorama of plant communities that they have for centuries. The Old Military Trail is relatively straight where it crosses the high and dry flatlands. It may deflect somewhat to bypass thick patches of saw palmetto or the dome-shaped cypress heads, but there are few obstacles in the terrain here and thus few detours in the trail.

It's quite another story, however, as one approaches the low marshy areas or sloughs. Here, the trailblazers saw fit to circle around and take the high ground...and the followers followed. From the vantage point of the perimeter, one can see arrowroot and pickerelweed reaching up above the surrounding bulrushes and sedges. Farther out from the center, in more casual water, gallberries and wax myrtles grow. Sometimes there are a few cypress trees and saw ferns interspersed around the edges, or one may see Florida willows ringing the ponds. It all depends on how wet it stays and what soil underlies the area.

Such a panoramic view is much different as you circle past a hammock or cut through a slough. Tall cabbage palms and live oaks festooned with spanish moss and bromiliads are typical of the hammocks (or "heads" as they are frequently called). They are usually surrounded by a high curtain of palmettoes. Once, when I had penetrated the barrier, I sat on a moss-covered log to enjoy the primordial beauty. The trunks of the great oaks were too huge to put my arms even halfway around them. The ground was a mass of fallen trunks all covered with mosses and ferns. Poking up through it all was the typical assortment of understory shrubs and vines—all searching in their own particular fashion for the few rays of sunlight which filter down from above.

On occasion, we have found wild Seville orange and grapefruit trees growing in the heart of these hammocks. They could be the result of seeds dropped by some recent hunter, but it is also known that the Seminoles used to plant citrus trees in the hammocks.

On this particular occasion, as I sat on my log, I thought it might be a good time to try out my new varmit call, so I did. In a very few moments, a huge owl silently swooped into a tree just over my head. If I hadn't caught the motion out of the corner of my eye, I'd never have known it was there. I looked up and said "Hi." It glowered back so quietly and forebodingly that I felt uncomfortable. I got up and left.

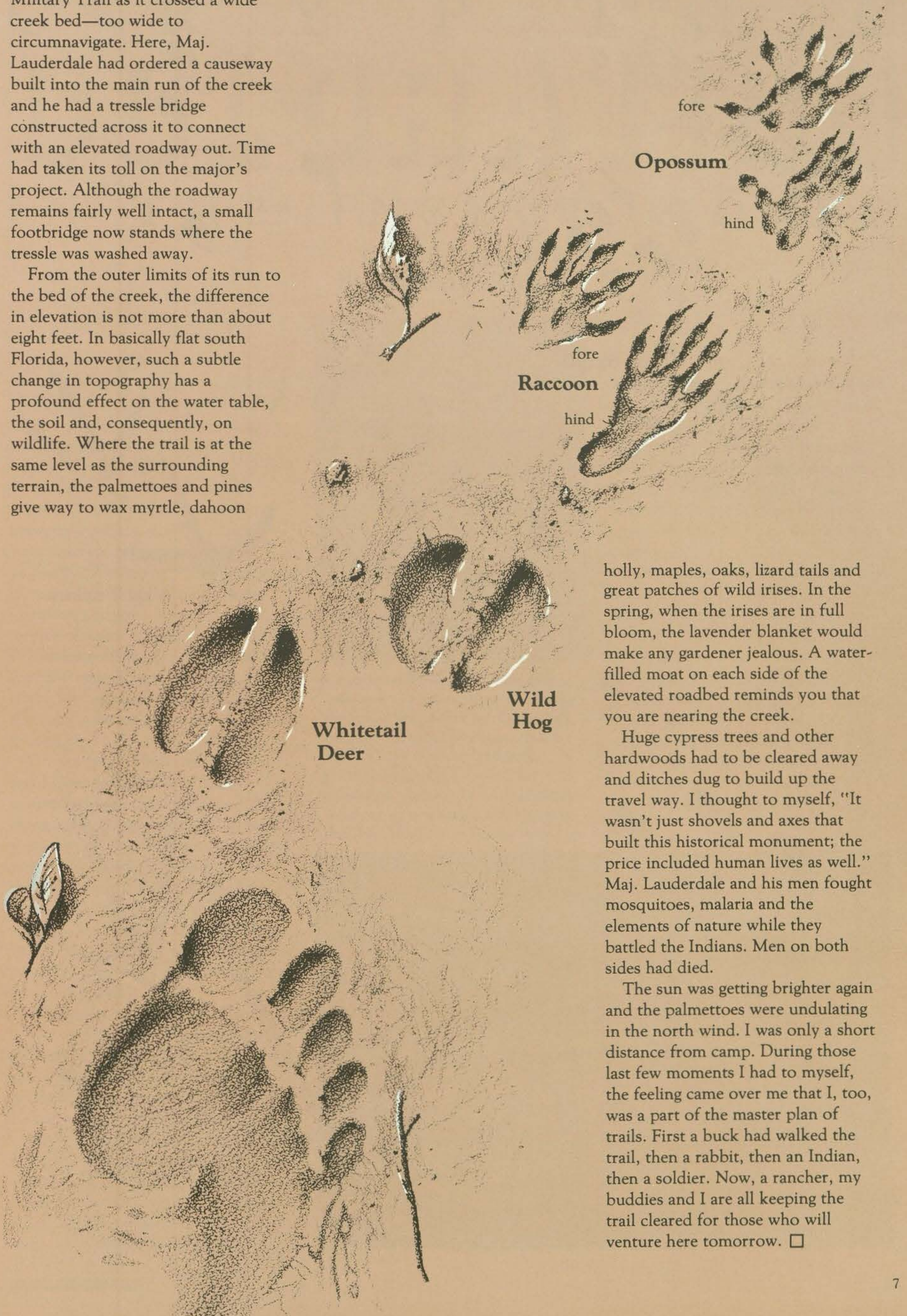
On the last leg of my trek back to camp, I had to follow the Old

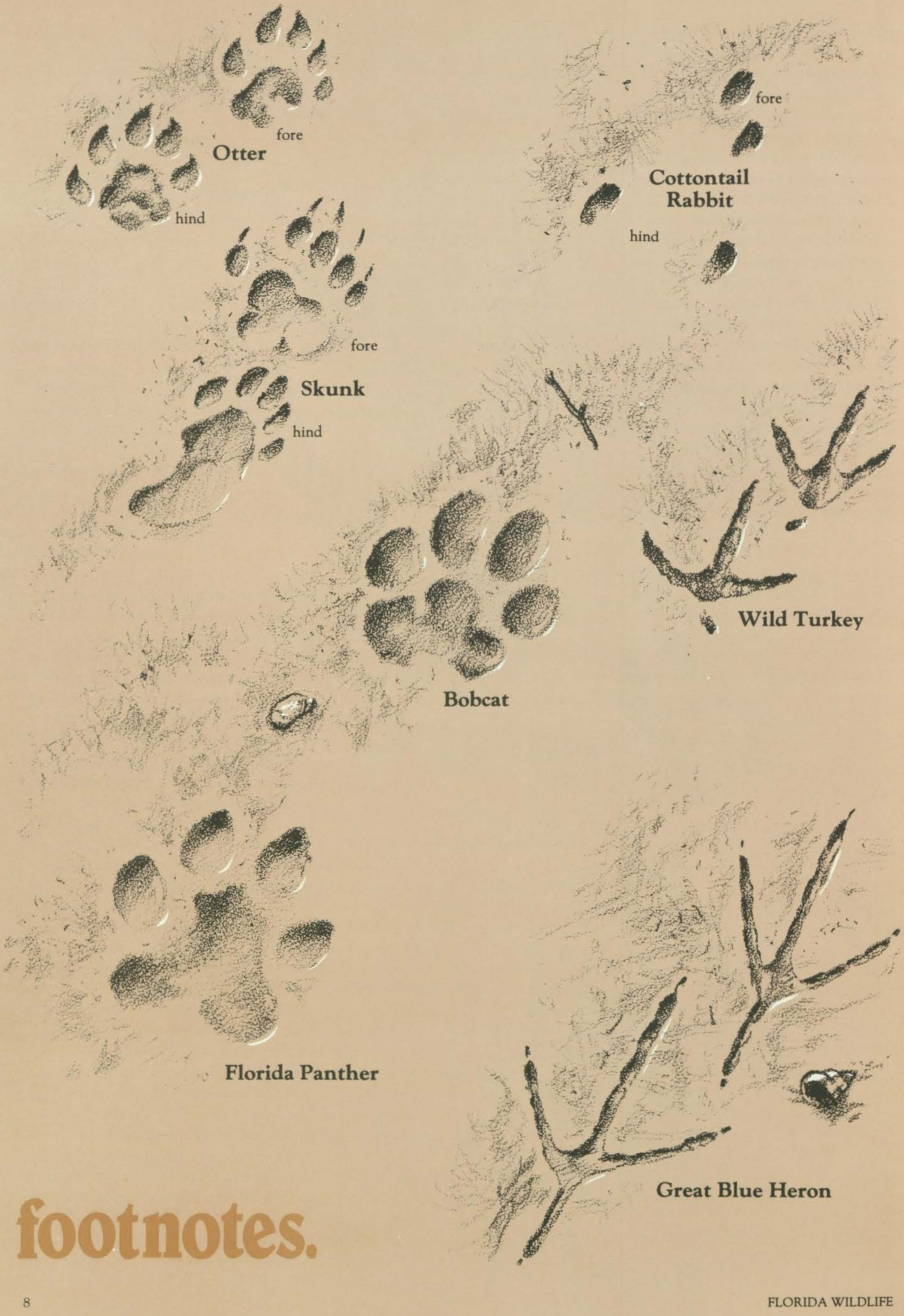
Military Trail as it crossed a wide creek bed—too wide to circumnavigate. Here, Maj. Lauderdale had ordered a causeway built into the main run of the creek and he had a tressle bridge constructed across it to connect with an elevated roadway out. Time had taken its toll on the major's project. Although the roadway remains fairly well intact, a small footbridge now stands where the tressle was washed away.

From the outer limits of its run to the bed of the creek, the difference in elevation is not more than about eight feet. In basically flat south Florida, however, such a subtle change in topography has a profound effect on the water table, the soil and, consequently, on wildlife. Where the trail is at the same level as the surrounding terrain, the palmettoes and pines give way to wax myrtle, dahoon holly, maples, oaks, lizard tails and great patches of wild irises. In the spring, when the irises are in full bloom, the lavender blanket would make any gardener jealous. A water-filled moat on each side of the elevated roadbed reminds you that you are nearing the creek.

Huge cypress trees and other hardwoods had to be cleared away and ditches dug to build up the travel way. I thought to myself, "It wasn't just shovels and axes that built this historical monument; the price included human lives as well." Maj. Lauderdale and his men fought mosquitoes, malaria and the elements of nature while they battled the Indians. Men on both sides had died.

The sun was getting brighter again and the palmettoes were undulating in the north wind. I was only a short distance from camp. During those last few moments I had to myself, the feeling came over me that I, too, was a part of the master plan of trails. First a buck had walked the trail, then a rabbit, then an Indian, then a soldier. Now, a rancher, my buddies and I are all keeping the trail cleared for those who will venture here tomorrow. ☐




fore
Otter
hind
fore
Skunk
hind
fore
Cottontail Rabbit
hind
Wild Turkey
Bobcat
Florida Panther
Great Blue Heron

footnotes.

CRYPTIC COLORATION IN THE INSECT WORLD

Text and Photographs

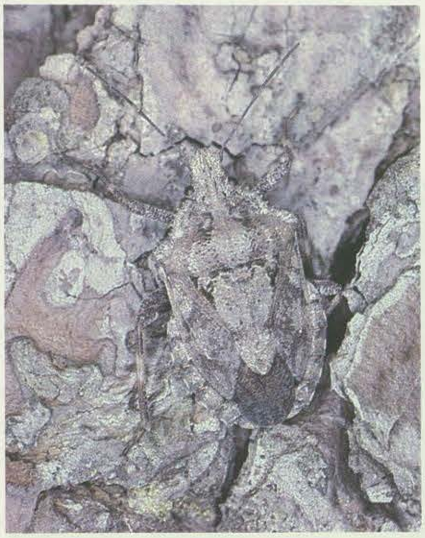
By James L. Castner

Insects are the most diverse group of organisms in the world and are found in almost every conceivable terrestrial habitat, as well as in many aquatic environments. Scientists estimate the total number of insect species at between 2 million and 30 million. Insects serve an important role as primary and secondary consumers in ecological communities. Their abundant numbers support a wide variety of more advanced animals. Because insects occupy a position so near the beginning of the food chain, almost every other animal in the community is a potential predator.

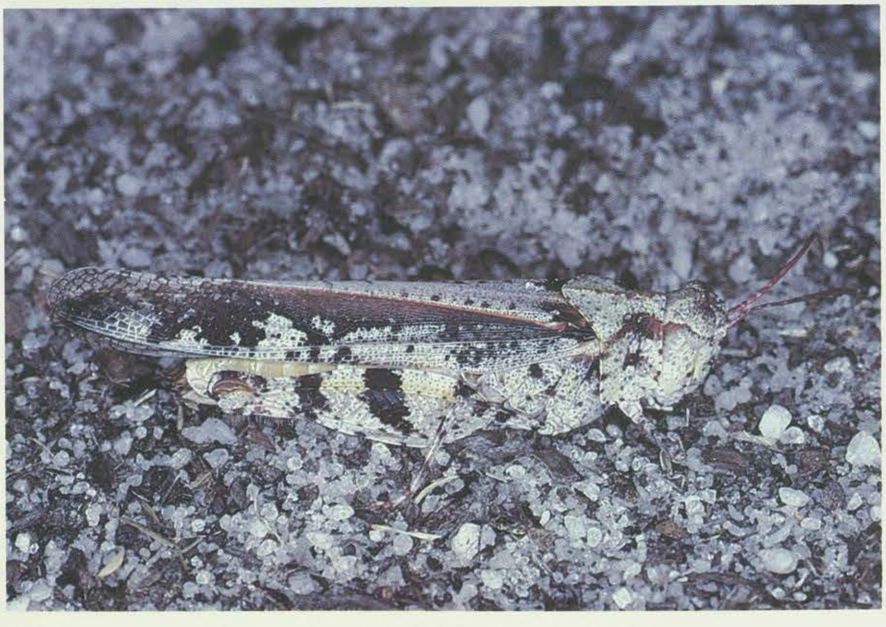
On the other hand, many physical and behavioral adaptations have evolved which help insects avoid being eaten. Some species protect themselves through venomous stings or spines capable of inflicting painful wounds. These insects are often brightly and distinctly colored. Their aposematic (warning) coloration signals predators that the potential prey may be distasteful or even dangerous.

Some insects imitate the bright colors and patterns of harmful species even though they themselves are harmless. Visually-orienting predators have learned to avoid certain color combinations.

Many insects, however, survive by escaping detection and recognition completely. These are the *cryptic* species, which through color, shape and behavior, are able to blend in with their habitat.

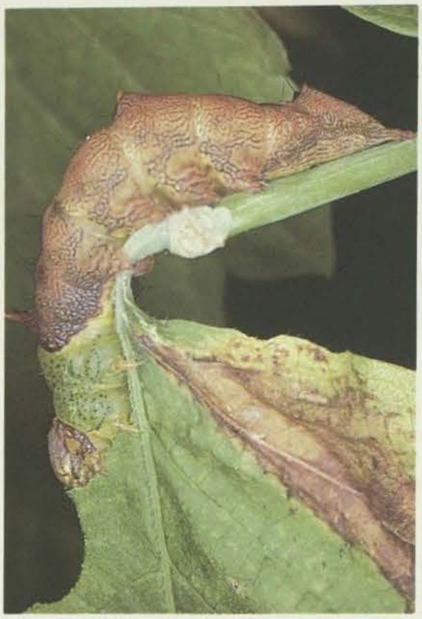


Cryptic coloration benefits many insects by enabling them to escape detection by predators. One stink bug species (*Brochymena arborea*), show above, resembles rough textured pine tree bark. The southern marbled locust (*Scirtetica mamorata*) orients its body to cast the least shadow in sunlight, below.



Cryptic coloration refers to colors and patterns that conceal. Florida has an abundant and diverse insect population, but some of the most interesting species are seldom seen due to the effectiveness of their disguises. Some of these unique creatures may be living in your own back yard.

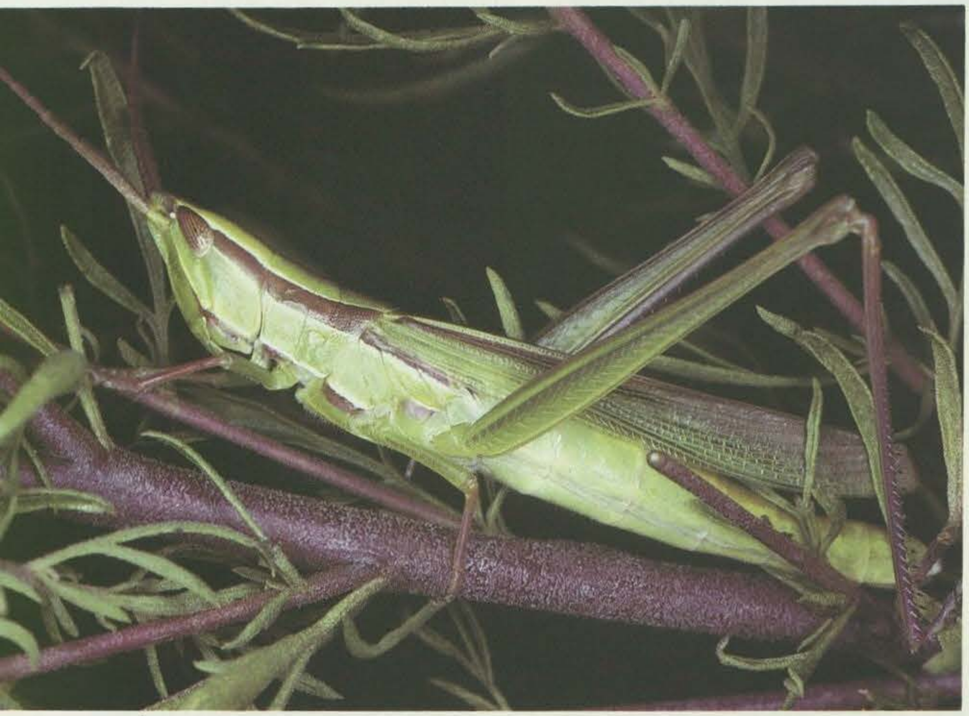
One of the most basic camouflage strategies is a body color that matches the background where an animal is commonly found. There are many examples of this among arthropods (which include both insects and spiders). One stink bug (*Brochymena arborea*) superbly illustrates this form of crypsis. The mottled gray cuticle (skin) of this insect enables it to "disappear" when viewed against the light and ▷

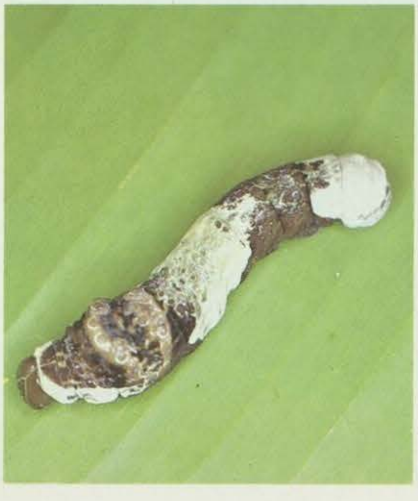


dark patterns formed by the rough textured bark of a pine tree.

Grasshoppers commonly match the foliage they feed and rest upon; many species are green or brown. This helps them to avoid being eaten by birds and other insectivorous animals. The southern marbled locust, for example, has a speckled pattern corresponding to the sandy terrain of the turkey oak hammocks it inhabits. Like most ground-resting grasshoppers, this species orients itself in sunlight to cast the least possible shadow.

The unicorn caterpillar (*Schizura unicornis*) has a small, irregulary shaped area directly behind its pea-green head which makes its color disruptive, when viewed against the leaves it feeds upon.





The common foliage-resting grasshopper (*Mermiria picta*) has longitudinal purple stripes on its slender body and wings which give it cryptic coloration which closely matches the dogfennel plant, upon which it lives, above. At the left, the giant swallowtail butterfly (*Papilio cresphontes*) larva, commonly called the "orange dog," so closely resembles a fresh bird dropping the predators usually don't bother it, even though it sits in plain view. Citrus is a preferred food of this larva.

The foliage-resting grasshopper species, *Mermiria picta*, has a slightly more elaborate disguise. Its long, slender body and wings are adorned with longitudinal purple stripes which resemble the stems of the dogfennel plant upon which it lives. Portions of the legs, eyes and antennae also are purple, further enabling it to blend in with the foliage. At rest, this insect remains motionless with its body closely pressed to the plant stalks, rendering it virtually invisible.

Butterfly and moth larvae also are typically green or brown in color. The unicorn caterpillar, however, is green and brown. This notodontid moth larva can be found in the summer feeding on the leaves of boxelder, apple, plum, cherry and hawthorn. It is predominately brown except for a small irregularly shaped area directly behind its pea-green head. Due to this coloration, the unicorn caterpillar is indistinguishable from the leaves it feeds upon. Brown, dried edges typically occur on the leaves of these food plants, and this larva's brown-green-brown pattern not only imitates this perfectly, but also serves to disguise the larva's basic body shape. Such *disruptive coloration* makes it difficult for predators to identify the unicorn caterpillar as a food item.

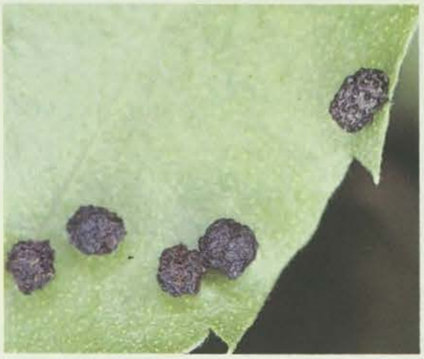
The giant swallowtail is a common Florida butterfly, and it too provides an amazing example of disguise and deception. The caterpillar of this butterfly feeds on citrus and is commonly known as the "orange dog." Although the larva is common, it often goes unrecognized because of its exact resemblance to a fresh bird dropping. Its blotchy brown and white pigmentation is maintained throughout its larval life. This color pattern combines with the wet appearance of the larva's skin.

The orange dog's masquerade continues after the larval stage, but with a change of costume. The mature caterpillar secures itself with silken threads to a twig in preparation for molting. The chrysalis formed after the larva metamorphosizes has a scaly, bark-like texture and closely resembles a broken twig. With this disguise, the giant swallowtail can avoid detection during its defenseless pupal stage and survive to emerge as an adult.

Fecal mimicry is not as common as other forms of cryptic coloration, but is exploited by several insect groups. The wings of certain noctuid moths also have the blotchy brown-and-white patterns of a bird dropping. Like the giant swallowtail caterpillar, these moths usually rest on the foliage in plain sight. Several species of Chrysomelid or leaf beetles exhibit a similar behavior. These beetles feed openly on leaves, but are seldom recognized by predators because they appear identical to caterpillar droppings. They are small, dark, roughly-textured and cylindrical in shape, and unless one is actually walking, the legs remain concealed below.

The benefit of these elaborate deceptions is survival. By resembling an inedible portion of their habitat, cryptic insects provide a difficult search image for their predators to identify. Ordinarily, once a predator finds an insect and is rewarded by the food and energy it provides, the predator will search again for that particular insect. However, when the prey resembles a nonpalatable object such as a twig or animal dropping, the predator will tend to confuse it with the real item. Without the constant reinforcement of a food reward, the search image apparently fades and disappears. This is also to the predator's advantage since it will benefit more by seeking food that is easier to locate, and thus requires less energy expenditure.

How have such complicated and exact pretenses evolved? It is possible that genetic changes lead to individuals that were less cryptic and thus easier to find. This theory says that they eventually disappeared because those individuals were eaten. However, hereditary changes which improved a disguise could have been passed on because a greater number of these individuals escaped predation and lived to reproduce. Through a continuous process of many gradual changes, the color, shape and behavior of these insects have slowly advanced to the incredible and often spectacular examples that can be seen today.

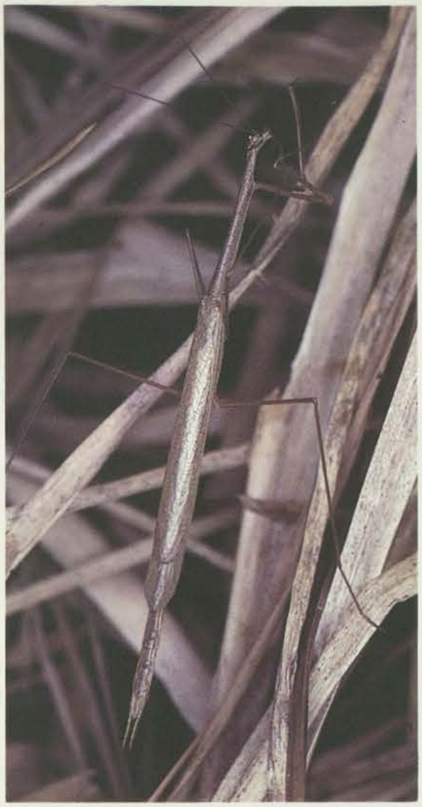


Chrysomelid beetles resemble the droppings of caterpillars so closely that they are overlooked by other species that would otherwise eat them. The beetle is at the upper right of the four droppings on the leaf.

Protective coloration and associated behaviors also have evolved in many predatory insect species. In such animals, it serves a double purpose—protecting them from their own enemies while allowing them to stalk prey unnoticed. The insect family of praying mantids shows many examples of cryptic predators. Mantids are generally green or brown and move with a slow, swaying gait that is difficult to detect.

The Florida grass mantid is a long and extremely slender twig-mimicking species that is light brown in color. It moves in the typical mantid manner and holds its raptorial front legs extended in front of its body. This not only increases the linear appearance of the insect, but also positions the grasping front legs for a strike. The grass mantid hunts for smaller insects in relative safety, concealed among the weeds and dried grasses which it so closely resembles.

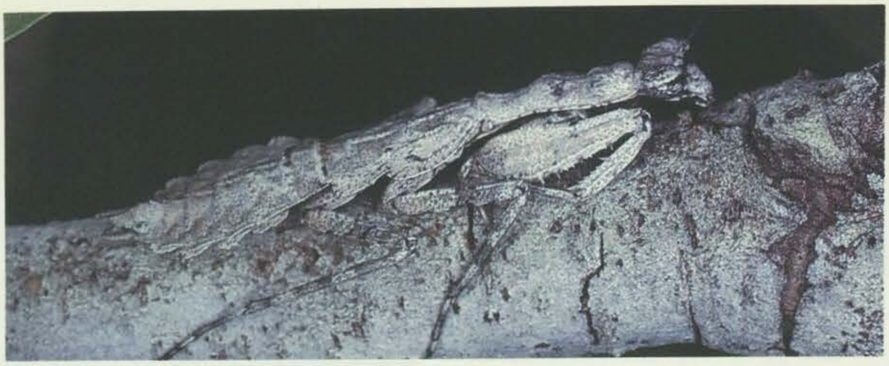
The bark mantid, also found in Florida, is a different species with different adaptive behaviors. This mantid is commonly found on the trunks and branches of trees. While immature, the bark mantid has a uniform gray color; however, as a winged adult, it has a mottled gray-and-black pigmentation. There are even flecks of green in the pattern which resemble the moss and lichens typically found on bark. The wings of the adult increase the already flattened appearance of this species, and by lying close against a tree trunk, this mantid casts no shadow and is difficult to spot.

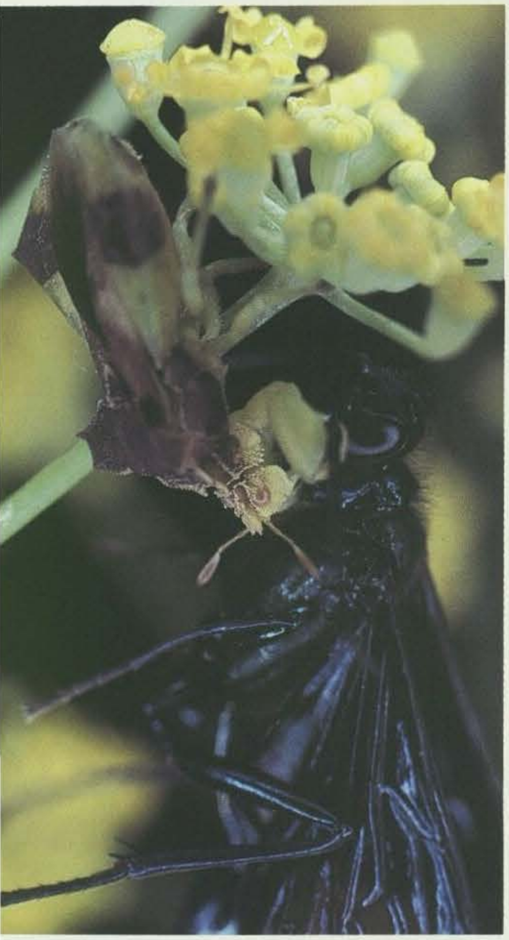


Florida's grass mantid (*Thesprotia graminis*) is long and extremely slender, giving it the appearance of a twig. Its brown color and shape help it to hunt prey, which it catches with its powerful, striking front legs.

Unlike the grass mantid which extends its front legs to enhance its disguise, the bark mantid folds its front legs back along its body immediately behind the head. This makes the outline of the head and body more difficult to distinguish and heightens the mantid's resemblance to a piece of bark.

Some camouflaged predators, such as ambush bugs, let their prey come to them. These bugs can be found concealed in or near flowers, where they patiently await nectar-feeding insects. When an unsuspecting butterfly or bee comes within reach, it strikes out with its heavily armed front legs. Large ▷





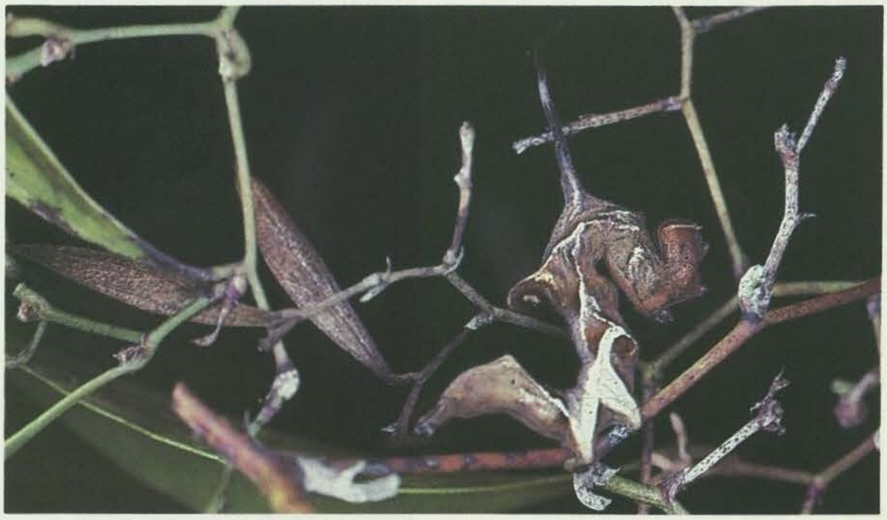
spines hold the prey fast while the bug uses its beak to leisurely siphon out the body fluids.

In Florida, the poinsettia-like weed *Euphorbia heterophylla* bears extra floral nectaries, which like flowers, attract a large number of insects. A close examination of the area around these nectaries, however, may disclose a lurking ambush bug. Colored green-and-brown to match the plant structures which surround it, the ambush bug rests motionless and goes unobserved by predator and prey alike.

Caterpillars exhibit some of the most interesting behaviors associated with concealment. The single filament looper is a geometrid moth larva that combines shape, color and behavior to effect its disguise. It feeds on greenbriar, a twining vine that also grows tendrils along its stems, which anchor it to supports. Projecting from the back of this looper are two curved filaments which resemble greenbriar tendrils. The body color of the caterpillar is various shades of brown throughout most of its life, but with prominent white patches which tend to disrupt visual image of its body shape. When at rest, both the rear and front body portions are held off of the supporting substrate. When moving or disturbed, the hind portion of the body sways one way and the front portion the other. This provides a very convincing impression of a leaf fluttering in the wind.

Caterpillars in the genus *Synchlora* have an equally effective protective adaptation. These noctuid moth larvae chew off portions of the plants they feed upon and attach them to their bodies. Different species use different structures for their camouflage. One species decorates itself with the green needle-like leaves of dogfennel. Another species uses the yellow petals of the flowers it feeds upon. Even when one knows what to look for, it is difficult to distinguish these well-concealed larvae from their host plants.

Thus, while some insects advertise their unpalatibility or venomous qualities with bright warning colors, the cryptic individuals survive by blending in with the habitat in which they live. The best examples of camouflaged insects may have been overlooked by predator and scientist alike, and might only come to light in future years when chance discovery allows an initial search image to be formed. □



The bark mantid (*Gonatista grisea*), shown at the top, is commonly found in Florida on the trunks and branches of trees. The middle photograph shows an ambush bug, another camouflaged predator, feeding on a wasp. At the bottom, a single filament looper (*Phyprosopus callitricoides*) is difficult to find among the stems and thorns of a greenbriar (*Smilax auriculata*) vine. Two curved filaments projecting from this larva's back help it combine shape, color and behavior to effect a disguise.

Angling In The Suburbs

By Frank Morello

Florida's freshwater resources provide some of the finest warm water fishing in the United States. The state's nearly 800,000 licensed freshwater anglers are blessed with about three-million acres of natural lakes and some 11,900 miles of streams. However, about three of every four Floridians live in cities, towns or suburbs where opportunities to fish or enjoy nature are limited. Driving distances and high transportation costs reduce or prevent many city residents from traveling to rural areas to enjoy some of Florida's best and most scenic fishing spots. On the other hand, increasing efforts by public agencies to appropriately manage urban waters is providing many of these anglers with more opportunities to enjoy sport fishing without having to travel so far.

Most Florida cities have lakes, ponds or canals which provide fishing within their boundaries, but many of these urban waters have degraded water quality. This has resulted from such human activities as shoreline development, shoreline dredging and filling, and from storm water runoff being channeled into these waters. All these activities contribute to water degradation which, in turn, cause fish populations to shift from an abundance of sport fish to increased concentrations of rough fish.

When such rough fish as shad and garfish replace the more desirable species such as bass, bream and crappie, urban anglers must compete for the reduced available numbers of sport fish. The end result of this is that fewer sport fish are available to each individual angler.

The Game and Fresh Water Fish Commission, recognizing public need for more urban fishing opportunities, is currently employing several management techniques to improve water quality in a number of urban areas and, consequently, improve sport fishing opportunities. Several of these techniques are described here.

Sport Fish Introductions

The Commission's sport fish introduction program is designed to improve fishing through stocking of additional game fish species such as sunshine bass, a fast-growing hybrid of the saltwater stiped bass and the freshwater white bass. Also, fishing potential in certain lakes may be enhanced to some degree by biological control of the rough fish. Sunshine bass feed on shad or other rough fish, resulting in utilization of the rough fish resource to provide better sport fishing.

Commission biologists have stocked a number of Florida lakes with sunshine bass. This manmade sport fish has displayed a remarkable growth rate—averaging one pound during the first year, two to three pounds the second year and four to eight pounds the third year. Sunshines aggressively feed on shad, are strong fighters and are readily caught by various popular angling methods.

Being a hybrid between two species, the sunshine bass does not sustain its population through reproduction. This provides biologists with an important control over this fish's numbers and distribution. This allows lakes to be stocked on an annual basis and provides for a "put, grow and take" fishery.

An example of a successful urban sunshine bass sport fishery is Lake Osborne, located in densely populated Palm Beach County. Surveys conducted by the Division of Fisheries during 1983 reported 30,000 angler-hours of fishing by local residents ▷

and winter visitors on this 356-acre lake during a four-month period commencing in October. That is equivalent to 85 hours of fishing pressure per acre during each quarter-year. These anglers harvested approximately 19,000 sport fish.

During the census period, sunshine bass anglers fished for 3,500 hours and harvested 3,000 sunshines—an excellent catch rate of almost one fish per hour. This is approximately three times better than one of the best largemouth bass lakes in the United States, Lake Okeechobee, which produces one largemouth bass per every two to three hours of fishing. From these figures, one can appreciate the demand being placed on many urban lakes.

Assuming the success of a fishery program can be judged by the amount of recreational fishing it generates, the Commission's data indicates sunshine bass have significantly contributed to the urban fishing experience at Lake Osborne. The Commission is also continually researching other freshwater sport fish species which may further enhance urban fishing, such as peacock bass.

Fish Attractors

Most anglers realize fish are not evenly distributed throughout a body of water. If they were, it wouldn't matter where you dropped your line; your luck would be the same anywhere in the lake. Fish tend to congregate in certain areas, usually near structures, either natural ones or such manmade structures as fish attractors. The theory behind a fish attractor is simple—provide cover and food, two basic necessities, and fish will be attracted.

Such predator species as bass and crappie feed upon the smaller bait fish drawn to these sites. Fish such as bluegills and redears (shellcrackers) are drawn to attractors to feed on smaller organisms like insects and crustaceans, which attach themselves to or live near the attractor.

Most attractors which have been placed in Florida lakes consist of submerged trunks and limbs of trees. These materials have proven to be quite successful and long-lasting. More than 200 fish attractors have been placed in Florida waters—both in large and small lakes. Each of the Commission's fish attractors is clearly marked by a

U.S. Coast Guard approved floating buoy. The highly visible buoys are colored white, black and orange and are identified by a Florida Game and Fresh Water Fish Commission emblem.

Most attractors cover approximately one-quarter of an acre of lake bottom and are situated so as not to interfere with boating, swimming or other desirable water use activities. The largest fish attractor in Florida, nicknamed "Bream City," is a five-acre site at Lake Griffin in Lake County.

Transplanting Aquatic Vegetation

Florida's freshwater sport fish normally spend part of their life cycles in or near aquatic vegetation. Aquatic plants are natural fish attractors since they provide fish with hiding places and spawning sites and encourage the growth of food organisms. The Commission both encourages and is active in an ongoing management program of transplanting desirable aquatic plants into certain urban lakes to enhance fish habitat.

Candidate lakes for this management technique are those with little or no natural vegetation. Preferred plants are native species because they are predictable in their growth habits and easier to control.

When a manmade lake or pond is newly constructed, it is desirable to introduce preferred plants. Plants which are selected for introduction should be species that do not impede fishing or other aquatic recreational activities. Excellent results have been obtained when such plants as arrowhead, white waterlily, pickerelweed, spadderdock and bulrush were planted.

Aquatic plant transplanting by the Commission has been done in Lake Hurricane (Okaloosa County), lakes Davis and Lawsona (Orange County), Okeeheelee (Palm Beach County), Webb (Charlotte County), lakes Palestine and Butler (Union County) and many others in the state. Aquatic vegetation has also been successfully transplanted into larger systems such as lakes Blue Cypress and Thonotosassa.

Water Drawdowns

Most natural Florida lakes experience fluctuating water-level conditions if allowed to stay in their natural state. Alternating periods of high and low water levels are desirable since they help maintain healthy aquatic vegetation, increased fish populations and sandy lake bottoms. But in most Florida urban lakes, water levels have been artificially stabilized or regulated with little or no fluctuation, resulting in a negative impact upon these lake environments. Under these conditions, sandy lake bottoms (desirable for fish spawning) experience a build-up of undesirable decayed and decaying organic matter. This breaks down to form a muck layer which results in poor quality habitat for fish. Vegetation communities are reduced and food chain production is less diverse in these artifically regulated lakes, and conditions needed for reproduction are poor or absent.

During low-water periods, exposure of lake bottoms to air and sunlight consolidates muck deposits which, in turn, increases the production of fish food organisms. These conditions also trigger germination of dormant plant seeds, which results in increased plant growth, and improves spawning habitat.

Commission biologists began experimenting with lake restoration techniques in the 1970s, with the drawdown of Lake Tohopekaliga in Osceola County. Plant communities, food chain production and fish populations were improved as a result of the drawdown. The program was later expanded to include Lake Kissimmee, then Fox Lake near Titusville. Presently, Commission biologists are working with other governmental agencies in applying this principal to more urban lakes as part of a statewide lake improvement program. Lake Hunter in Polk County is one of these.

Fertilization Programs

A lake's food chain begins when smaller living organisms are eaten by larger ones. For example, algae is consumed by very tiny animal life called zooplankton, which in turn is eaten by larger life forms such as insects and minnows. Bigger fish then eat the insects and smaller fish.

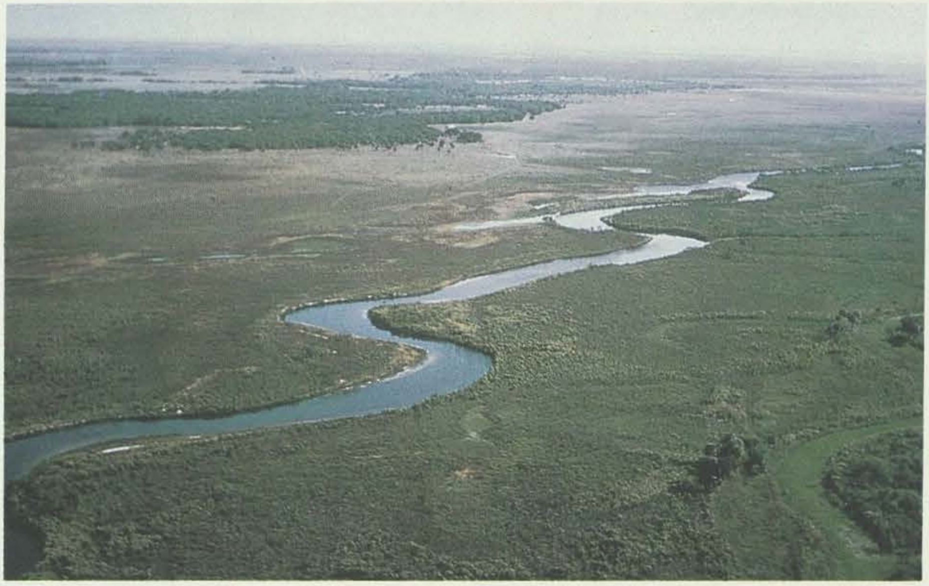
Each lake's ability to produce fish food is directly related to its level of fertility. The more fertile a lake is, the more fish food it is generally capable of supporting, within certain limits.

In many cases, biologists can increase fish carrying capacity in ponds having low production by initiating a fertilization program, carefully using fertilizers containing the elements needed to stimulate the growth of algae and zooplankton. In Karick Lake (Okaloosa County), for example, harvestable sport fish weight was increased by 365 percent following fertilization. Excellent results were also obtained at Lake Stone in Escambia County.

Commission biologists understand many urban anglers desire more opportunity to sport fish and, in an effort to help satisfy this desire, these innovative urban fisheries management techniques are being used. □

Restoring The KISSIMMEE RIVER

A 12-Mile Test Project To Study Alternatives



GFC Photograph

Florida's Kissimmee River, as it appeared before channelization. Note the dense natural vegetation of undisturbed areas along the banks.

By Larry S. Perrin and John M. Wood

What's around the next bend? On Florida's Kissimmee River before the 1960s, one never knew. Today, conditions are much different and many of those original river bends are missing.

The Kissimmee River makes up the lower part of Florida's expansive Kissimmee River Basin and it delivers fresh water from Lake Kissimmee to Lake Okeechobee. Originally, water swirled through 100 miles of braided river channels within a one- to two-mile wide flood plain marsh. This marsh provided valuable habitat for a wide variety of fish and wildlife.

Responding to local environmental conditions, particularly rainfall, this unique river system was constantly changing. A primary driving force was the natural fluctuation of water levels, particularly when associated with periodic floods and droughts. This made for an extremely dynamic and productive ecosystem. Plant communities were typically maintained in an early successional state and, because of the undulating topography within the flood plain, a mosaic pattern of various habitat types occurred naturally.

Fish and wildlife associated with the ecosystem were adapted to this type of diversification. During times of rising water, fish and other aquatic organisms moved into adjacent wetland areas, which provided food and nursery areas for small forage organisms, as well as for game and nongame fish. When the water receded during the dry season, forage organisms were concentrated, thus providing an abundant food supply for wading birds, largemouth bass, alligators and raccoons, to name a few of many species which benefited. Anglers also benefited, because the same process which served to concentrate the forage organisms also concentrated gamefish. Under these original conditions, the Kissimmee River had earned national recognition for its excellent largemouth bass fishing.

The present Kissimmee River system, however, has been severely altered from those earlier times. During the 1960s, the river was modified from its original state by the U.S. Army Corps of Engineers Central and Southern Florida Flood Control Project. Consequently, this river suffered tremendous adverse impacts when a 200- to 500-foot wide and 30-foot deep canal (C-38) was excavated through the heart of its flood plain. Associated with the 50-mile canal were six control structures (dams) designed to regulate the flow of water to Lake Okeechobee. The construction of these flood control structures essentially eliminated natural water level fluctuations and permanently drained most of the adjacent flood plain marshes. The remaining marshes primarily occur just above each of the control structures. However, due to permanent inundation of these areas, dense stands of a relatively few species of plants now proliferate. The previously undisturbed natural periodic drying of these areas had been just as important to the ecosystem as seasonal flooding in maintaining habitat diversity.

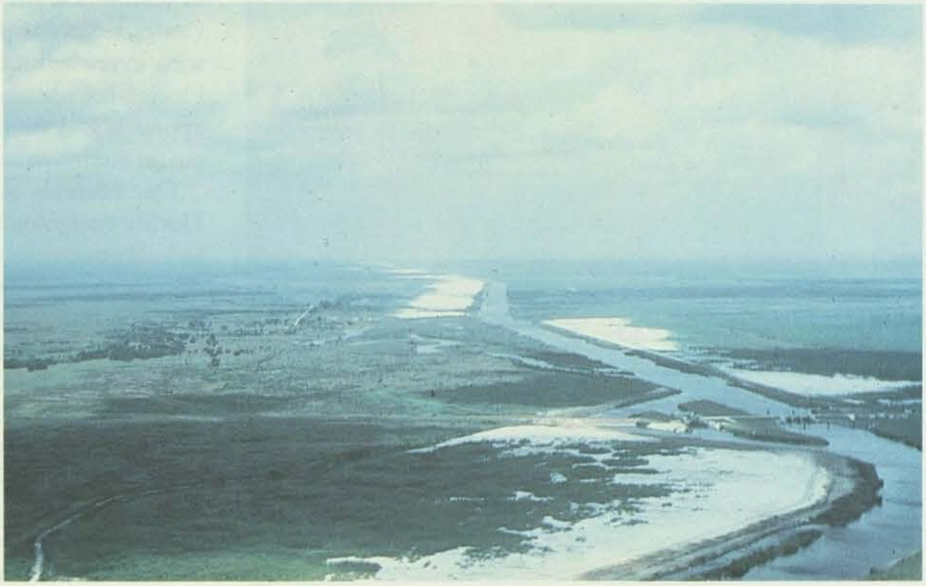
Canal construction also cut off numerous sections of river channel. Many were drained or eliminated in the initial construction by placement of spoil (dredged material from the C-38 canal) which covered approximately 6,000 acres of flood plain. Many other river channels remained, but currently they continue to deteriorate due to accumulation of organic sediments and encroachment of vegetation.

Flowing water is an essential element of a healthy riverine system. Stream flow originally served to keep this river's channel open and clear of vegetation and loose organic material which is so prevalent now. Within the past few years, this situation has become extremely noticeable, resulting in great loss of fish habitat and difficult navigation.

One of the major biological concerns under the current canal system is the low amount of dissolved oxygen in the water during certain times of year. Dissolved oxygen is critical to the survival of most aquatic organisms, particularly fish populations. In a natural river system, the stream flow is often the primary mechanism for maintaining adequate dissolved oxygen levels, as the movement serves to mix and aerate the water.

In a lake, wind and wave motion are the dominant physical mechanisms which aerate the water. The remnant river channels of the Kissimmee River, however, are too narrow and circuitous to be aerated by wind, and the C-38 canal is too deep to allow complete mixing. Quite often, particularly during the hot days and nights of summer, as much as one-half to two-thirds of the water column in the C-38 canal has unsuitable oxygen levels.

Soon after the channelization project was completed (1970), public concern over the adverse environmental impact began to swell. Finally, in 1976, the Florida Legislature created the Coordinating Council on the Restoration of the Kissimmee River Valley and Taylor Creek-Nubbin Slough Basin (KRCC) and instructed the council to investigate and develop measures which would address environmental concerns associated with this area. ▷

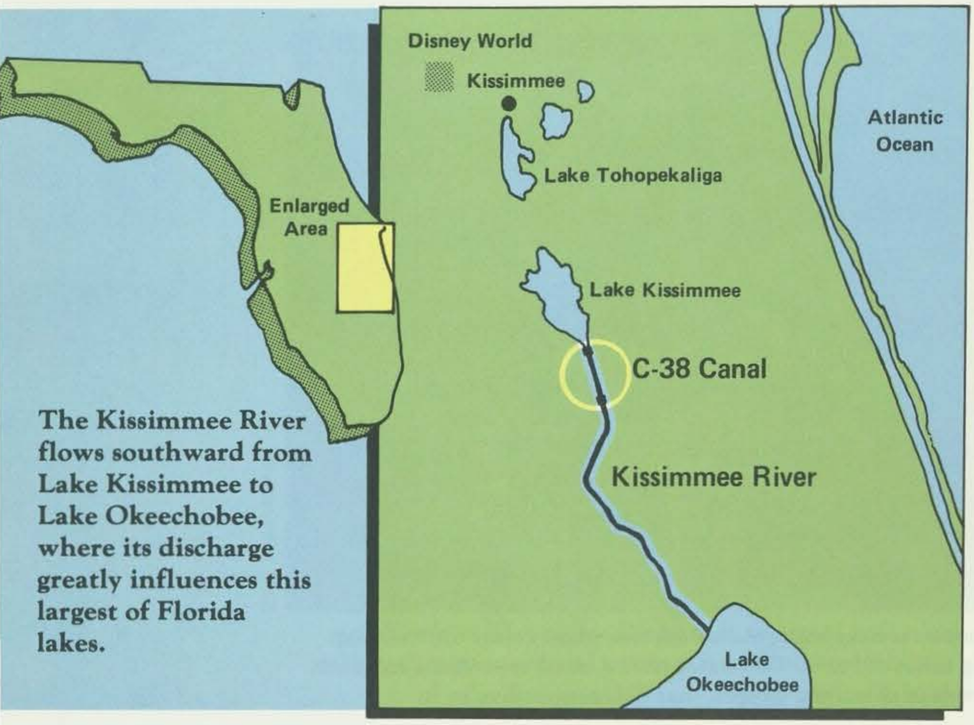


GFC Photograph

Canal C-38 after construction has replaced diverse plant communities with barren spoils along miles of bank. The water in the canal sometimes has such low levels of dissolved oxygen that fish cannot live in it.

The state also requested, in 1977, that the U.S. Army Corps of Engineers conduct similar investigations. Through this process, involving both state and federal agencies and the general public, a list of restoration alternatives was compiled.

Restoration proposals ranged from a "no action" alternative to "complete backfilling." The no action plan would essentially leave the canal system intact and operating in its current state. Under the complete backfilling option, a large percentage of the C-38 canal would be filled in, thus restoring wetlands and returning riverine functions. The other alternatives fall between these two options and can be classified into two groups, dechannelization and nondechannelization alternatives.



The Kissimmee River flows southward from Lake Kissimmee to Lake Okeechobee, where its discharge greatly influences this largest of Florida lakes.

As the name implies, dechannelization proposals would, to varying degrees, negate the C-38 canal. Conversely, nondechannelization alternatives would provide some environmental benefits, while maintaining flood control capabilities—but a riverine system would not be achieved.

The Kissimmee River restoration program is an extremely large and complex issue. Numerous state and federal agencies are intimately involved in the restoration process, including the Game and Fresh Water Fish Commission, Department of Environmental Regulation, Department of Natural Resources, South Florida Water Management District, Department of Community Affairs, Department of Agriculture and Consumer Services, U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service. In addition, many organizations, landowners and individuals from the general public are expressing their views. There is much controversy, yet progress is slowly, but surely being made.

In this regard, the citizens of Florida have demonstrated a strong desire to restore the Kissimmee River. In 1983, the KRCC unanimously recommended dechannelization of the Kissimmee River, and after that, Governor Bob Graham introduced the Save Our Everglades program in 1984. This important environmental program also called for restoration of original river values and a return of Lake Okeechobee and the Everglades to an appearance and function more like they were at the turn of the century. As a part of this well-received program, Governor Graham formed the Kissimmee River Resource Planning and Management Committee (KRRPMC) and instructed it to develop a plan which specifically addresses land use, land acquisition, water quality and economic development for the Kissimmee River and Taylor Creek basins.

The initiation of these programs clearly reflects the intention of the state. However, construction of the C-38 canal system was a federal project, and any significant amount of restoration will require Congressional approval, so, even with overwhelming support in Florida for restoration, such approval is definitely not guaranteed.

One example of a similar nature is Florida's ongoing request to the federal government for Congress to deauthorize the Cross Florida Barge Canal. It took many years of effort for the state to convince one subcommittee of Congress to prepare a bill to deauthorize further construction. Therefore, it is quite possible that the Kissimmee River restoration program will continue to be an issue for many years to come.

So far, the first step toward restoration of the Kissimmee River has been to initiate a test demonstration project in a 12-mile section (Pool B). A primary goal of this initial program is to test various engineering features that would be essential elements of a more comprehensive restoration plan. The demonstration project is divided into two phases. Phase 1, which is almost complete, consists of installing three weirs (steel walls which block the C-38 canal and divert water into segments of remaining river channel), fluctuating water levels and creation of two flow-through marsh systems. Phase 2, if approved, will involve actual backfilling of Pool B, using adjacent spoil material.

The demonstration project requires the input and cooperation of several of Florida's state agencies to monitor the various features of the program. The Commission is responsible for evaluating the environmental response of selected fish and wildlife populations and vegetation communities, and for monitoring certain physical parameters, such as sediment movement and water flow. These scientific investigations are essential in order to accurately assess environmental changes which are expected to result from this demonstration project.

The demonstration project will provide a significant amount of very useful information for evaluation of its various engineering aspects. Environmental benefits are also anticipated. While these benefits may be undramatic, particularly during Phase 1, they should indicate the potential for a more comprehensive restoration program. Even though small in scale, this demonstration project represents the first attempt to offset and correct the adverse impacts that have occurred as a direct result of channelization of this previously undisturbed river system. Hopefully, successful completion of the present project will lead to large-scale application.

This brings us to a very important point. Why is it necessary or even desirable to restore the Kissimmee River? This question has been debated and discussed for many years by all parties involved. From the standpoint of those in favor of restoration, the program would correct a serious mistake and attempt to restore a unique and significant part of the Kissimmee River, Lake Okeechobee and Everglades system to what it once was.

Perhaps a more objective approach, one which encompasses a holistic view, may provide the best answer. First, it is necessary to look at the magnitude of environmental changes that have occurred throughout Florida during recent decades. At the turn of the century, there were approximately 20 million acres of wetlands habitat—but now wetlands habitat totals less than 12 million acres, and much of it has been altered. Both outright loss of wetlands and wetland alteration have had a dramatic effect on the native fish and wildlife resources these areas previously supported.

In the past, wetlands were mistakenly viewed as "wastelands." However, we now know they are some of the most productive areas in the world. They provide feeding and nursery areas for man's fish and forage organisms, which in turn are a source of food for other wildlife. The many varieties of plants which grow in these areas also provide essential faunal food and cover. In addition, wetlands serve as a natural filtering and cleansing system for water, and they provide tremendous opportunities for human recreation, education and aesthetics.

These important attributes hold true for the wetlands which previously occurred along the Kissimmee River. But today, with most of the river's original flood plain wetlands now drained, and the few remaining marshes in poor condition, its total loss is at hand if corrective measures are not soon initiated. Currently, there is a great opportunity to restore much of these original wetlands by returning water level fluctuation and flow, particularly if the complete backfilling alternative is implemented.

Strong opposition exists from Florida's commercial agricultural interests because they have invested time, money and labor into converting much of the former flood plain marsh into pasture for cattle raising operations. Substantial restoration would alter these practices, but there is a general consensus that compensation should be provided to those landowners who would be adversely impacted by restoration efforts. The continuation of cattle ranching, associated with a restoration program, is considered very desirable, particularly by the Commission.

Cattle have been a part of the Kissimmee River system since the first White settlers moved into this region. With proper management, such grazing activity serves to create openings in the marsh and aids in improving habitat diversity. This is beneficial for many species of valuable fish and wildlife.

Another important issue is the desire by developers to construct "waterfront" urban projects along the Kissimmee River/C-38 canal, primarily on the spoil sites. This has been a serious concern of the Commission, other state agencies and private conservation organizations. Currently, the KRRPMC is addressing several issues, including land use, within the Kissimmee River drainage basin. Hopefully, the KRRPMC will form recommendations for adequate protection from such development projects, but if additional urban development is allowed within the flood plain, it could establish a precedent that could pave the way for other development, thus compromising the restoration program. This river system has already suffered dramatically, and to allow further degradation would be tragic.

Finally, a much-publicized issue is the costs associated with restoration. Implementation costs of a dechannelization alternative, such as complete backfilling or partial backfilling, would be high initially. However, long-term operation and maintenance costs should drop due to the negation of several control structures and a large portion of the C-38 canal. On the other hand, the nondechannelization restoration alternatives, which have quite variable initial costs, would require substantial operation, maintenance and management costs over time.

Perhaps the most important concern should be the potential impact and cost if no restoration measures are implemented. In this event, the river/canal system would continue to deteriorate, and urban development would inevitably move into, and along, the flood plain, eliminating any opportunity for adequate restoration of the river. Also, increased degradation of Lake Okeechobee will occur.

The Kissimmee River is the largest tributary of Lake Okeechobee and its future will definitely be a keystone in determining the future of all of south Florida's environment. ☐

Water,

the precious, life-sustaining liquid upon

which all Earth's life depends is one great essence of Florida. This state's more than 7,700 lakes (of 10 or more acres) and more than 1,700 streams dot and lace all 67 counties. Beneath our streets and highways, homes and buildings, forests, farms, pastures and dumps lies a resource we absolutely need—a supply of underground water reservoirs. Six major aquifers contain it.

The most prolific of these is the Floridan Aquifer. Flowing generally southward and underlying most of the state, it is one of the principal aquifers in the United States. It averages about two-tenths of a mile in thickness. It not only flows beneath most of Florida, but it also reaches into parts of Georgia, Alabama and South Carolina. Most of it is fresh water, but in extreme western and southern Florida it is salty.

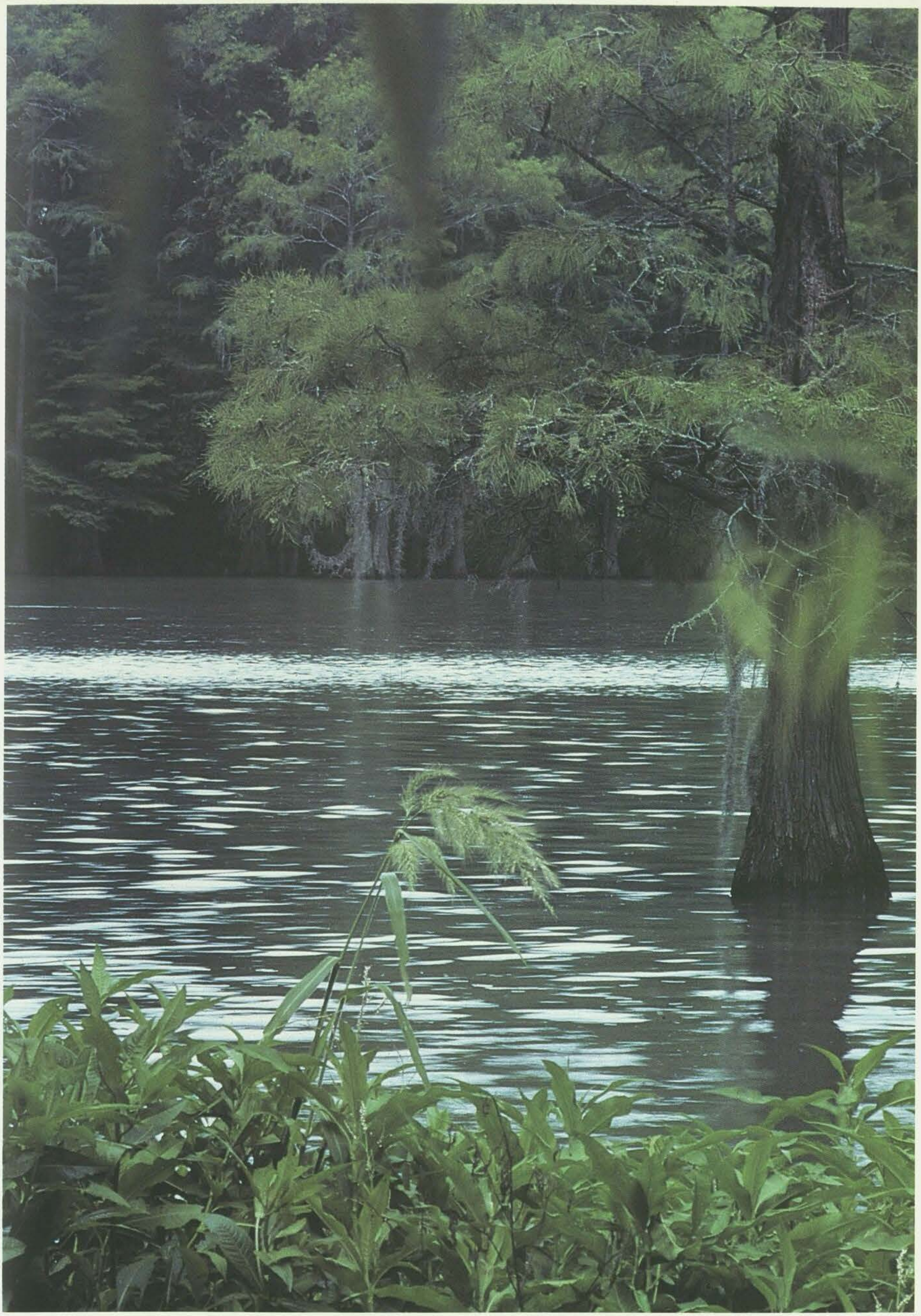
Of the other major Florida aquifers, south Florida's Biscayne Aquifer is also very important. Both the Biscayne and the Floridan supply roughly 43 percent each of all the public water supply used in Florida. However, the Biscayne Aquifer lies below only Dade and Broward counties, and under portions of Palm Beach, Collier, Hendry and Monroe counties. It is Florida's highly populated "Gold Coast's" only drinking water source.

The Biscayne Aquifer is relatively close to the land surface, and not nearly as deep as the Floridan Aquifer. Because of the properties of the soils which hold the Biscayne, it is very permeable, and thus easily vulnerable to contamination. ▷

Florida's Fresh Water is Vital To All Life.

Text and Photographs

By John Waters Jr.



Some hydrologists say the Floridan Aquifer holds 30,000 times as much water as the state's 13 largest-flow coastal rivers empty into the Gulf of Mexico and Atlantic Ocean in a single day. Together, these major coastal rivers drain some 60,000 square miles of land surface (some of this being in neighboring states) and discharge an average of some 60,000 cubic feet per second of fresh water into the sea. At their deltas, these rivers feed a complex series of estuaries, where a great variety of marine life forms, most of them important to man, begin or live at least part of their life cycles.

The present abundance of fresh water in Florida depends much on our subtropical climate—resulting largely from the peninsula's prominent position on the planet, where it is mostly surrounded by the sea. It is, after all, the sea which forms Florida's original primary source of the fresh water. Through an estimated 150 billion gallons of precipitation during an average day, mostly in the form of rain, water evaporated from the sea recharges our lakes, streams and aquifers.

This water falling from the clouds amounts to some 85 percent of our original fresh water supply. Only about 15 percent of Florida's water flows into the state by streams coming from neighboring Alabama and Georgia.

Average rainfall over Florida is 53 inches per year, and about a fourth of this water flows back to the sea again, after draining into and through various surface and subsurface water systems. Most of the remainder evaporates directly back into the atmosphere or is first absorbed, then transpired by plant life. Some of the countless drops of rain trickle and percolate downward into the aquifers, and in so doing, they transport everything with them that water can dissolve—and this can be almost anything.

Water is sometimes called "The Universal Solvent" because most of the substances known to exist on this planet can be dissolved in it—albeit ever so slowly or in such minute proportions that it takes very sophisticated instruments to measure the amounts. This property of water makes it the human body's ideal fluid; and it also makes water the ideal carrier of nearly every contaminant known to humankind.

Contaminants in our water supply have become fairly common in a number of places during recent years. Contaminated wells, lakes and streams have been found throughout the state. Although it can usually be determined from various tests what pollutants and poisons are present, it is not always easy to pinpoint the sources of these substances. In some instances, sources have been determined and they have included dumped batteries with their lead and acid, dumped agricultural and industrial chemicals and leaking underground gasoline storage tanks.

The little crossroads village of Wacissa (Jefferson County) was found most recently to have contaminated residential water wells. The Department of Natural Resources determined nearby old leaking gasoline tanks were the probable source of the contamination. Some of the residents there now require bottled water for all their normal uses—including drinking, cooking and bathing. There are some 200 other locations in the state where gasoline is known to be leaking or has already leaked into the local water supply.

A small community in Alachua County, Fairbanks, has also experienced a similar problem with contaminated residential water wells. There too, bottled water must be used by many of the residents living in the area. The cause of the poisons in these wells was a nearby borrow pit, where surplus chemicals from road paving products, and the containers in which these were packed, were dumped. These are but two small communities where bottled water has become a necessity rather than a luxury.

When our rainfall is observed and measured over many years of time, even humid, subtropical Florida has its periods of drought and relative water shortage. Rainfall, surface water, underground water, surface evaporation and evaportranspiration by plants fluctuates widely over time and from place to place in the Sunshine State. In the few thousand years humans have inhabited this land, there have been periods when the landscape was not characterized by thickly vegetated swamps, moist woodlands, water-filled lakes and steadily flowing streams, but instead was desert.

A number of cacti and succulents still grow here as remnants of those years long ago when desert plants were growing all over the peninsula.

Given the lack of human control over the Earth's weather system, Florida could someday become a desert environment again. Only a shift of the wind would be necessary. And while we live our daily lives with varying amounts of uncertainty, through the course of natural events, we find ourselves collectively in the midst of very many human activities which have already changed the character of our natural water supply to a great degree.

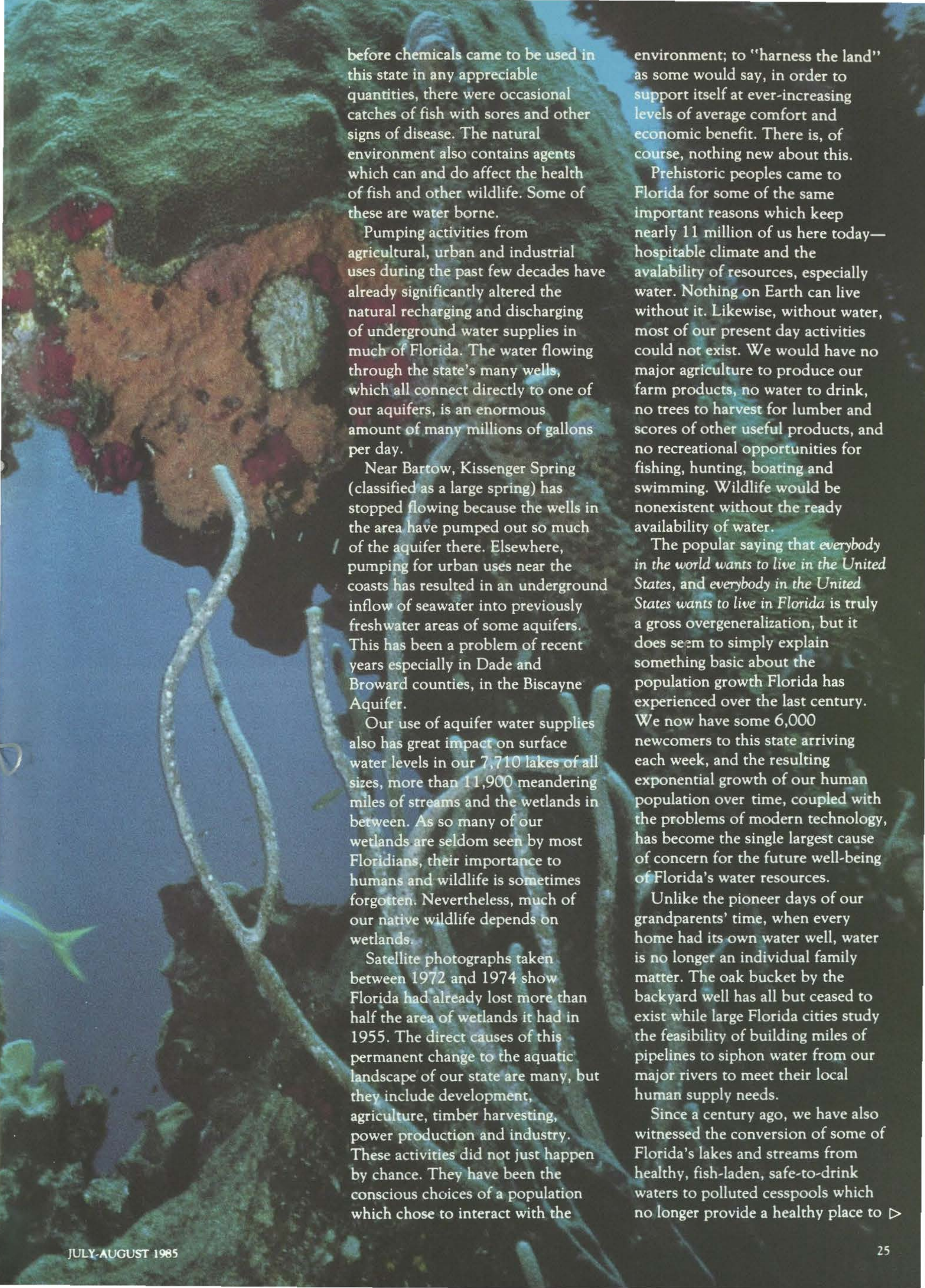
In parts of Levy, Citrus, Hernando, Pasco and Hillsborough counties, rainfall seeps readily and directly into the Floridan Aquifer because of the geological characteristics of the soils and underlying strata there. In other parts of Florida, sinkholes and their underground flow systems directly connect the surface to the aquifers. Different soils and topography, as well as total rainfall and surface vegetation provide variable levels of permeability to the water which recharges our aquifers. For these reasons, the aquifers can become polluted at one place, and affect humans living miles away.

All over the state, rainfall leaches out chemicals used in growing lawns, gardens and agricultural crops, then the runoff makes its way into streams and lakes or seeps downward to the aquifers. In lakes and streams, the resulting boost in nutrients is a major cause of excessive growth of many aquatic plants, as well as a potential concentrated source of contaminants which can make their way into our aquifers. Most of the chemicals used in modern agriculture are poisonous in sufficient quantities, if consumed by humans or wildlife, including nitrates which are being found in ever-increasing amounts in much of our drinking water.

Florida anglers sometimes catch fish which show symptoms of disease, and since chemicals have lately become a more common subject for discussion, there has been more popular opinion that there is a link between sores on fish and chemicals in the water. Although it has been determined that certain chemicals do have the capacity for causing such diseases as cancer in wildlife, there is much more to be known than just this single fact.

Whether or not chemicals are actually causing diseases in fish, such as has recently been suspected in the St. Johns River, is still unknown. Although there are pollutants in this river, determining the link between them and the recent catches of fish with sores on their bodies remains a subject which will require more scientific study. Historical records indicate that even ▷

Mining activities can result in concentrations of phosphorus compounds escaping into lakes and streams, if they connect to the surface water flow. Sometimes, mine pits reach down into the underground water supply. Tallahassee's municipal waste water treatment plant occupies a very large tract of land, upon which treated water is used to grow pasture grasses. Beef cattle then feed on the grass crop; however, animal waste is also a potential contaminant to our water supply.



before chemicals came to be used in this state in any appreciable quantities, there were occasional catches of fish with sores and other signs of disease. The natural environment also contains agents which can and do affect the health of fish and other wildlife. Some of these are water borne.

Pumping activities from agricultural, urban and industrial uses during the past few decades have already significantly altered the natural recharging and discharging of underground water supplies in much of Florida. The water flowing through the state's many wells, which all connect directly to one of our aquifers, is an enormous amount of many millions of gallons per day.

Near Bartow, Kissenger Spring (classified as a large spring) has stopped flowing because the wells in the area have pumped out so much of the aquifer there. Elsewhere, pumping for urban uses near the coasts has resulted in an underground inflow of seawater into previously freshwater areas of some aquifers. This has been a problem of recent years especially in Dade and Broward counties, in the Biscayne Aquifer.

Our use of aquifer water supplies also has great impact on surface water levels in our 7,710 lakes of all sizes, more than 11,900 meandering miles of streams and the wetlands in between. As so many of our wetlands are seldom seen by most Floridians, their importance to humans and wildlife is sometimes forgotten. Nevertheless, much of our native wildlife depends on wetlands.

Satellite photographs taken between 1972 and 1974 show Florida had already lost more than half the area of wetlands it had in 1955. The direct causes of this permanent change to the aquatic landscape of our state are many, but they include development, agriculture, timber harvesting, power production and industry. These activities did not just happen by chance. They have been the conscious choices of a population which chose to interact with the environment; to "harness the land" as some would say, in order to support itself at ever-increasing levels of average comfort and economic benefit. There is, of course, nothing new about this.

Prehistoric peoples came to Florida for some of the same important reasons which keep nearly 11 million of us here today—hospitable climate and the avalability of resources, especially water. Nothing on Earth can live without it. Likewise, without water, most of our present day activities could not exist. We would have no major agriculture to produce our farm products, no water to drink, no trees to harvest for lumber and scores of other useful products, and no recreational opportunities for fishing, hunting, boating and swimming. Wildlife would be nonexistent without the ready availability of water.

The popular saying that *everybody in the world wants to live in the United States*, and *everybody in the United States wants to live in Florida* is truly a gross overgeneralization, but it does seem to simply explain something basic about the population growth Florida has experienced over the last century. We now have some 6,000 newcomers to this state arriving each week, and the resulting exponential growth of our human population over time, coupled with the problems of modern technology, has become the single largest cause of concern for the future well-being of Florida's water resources.

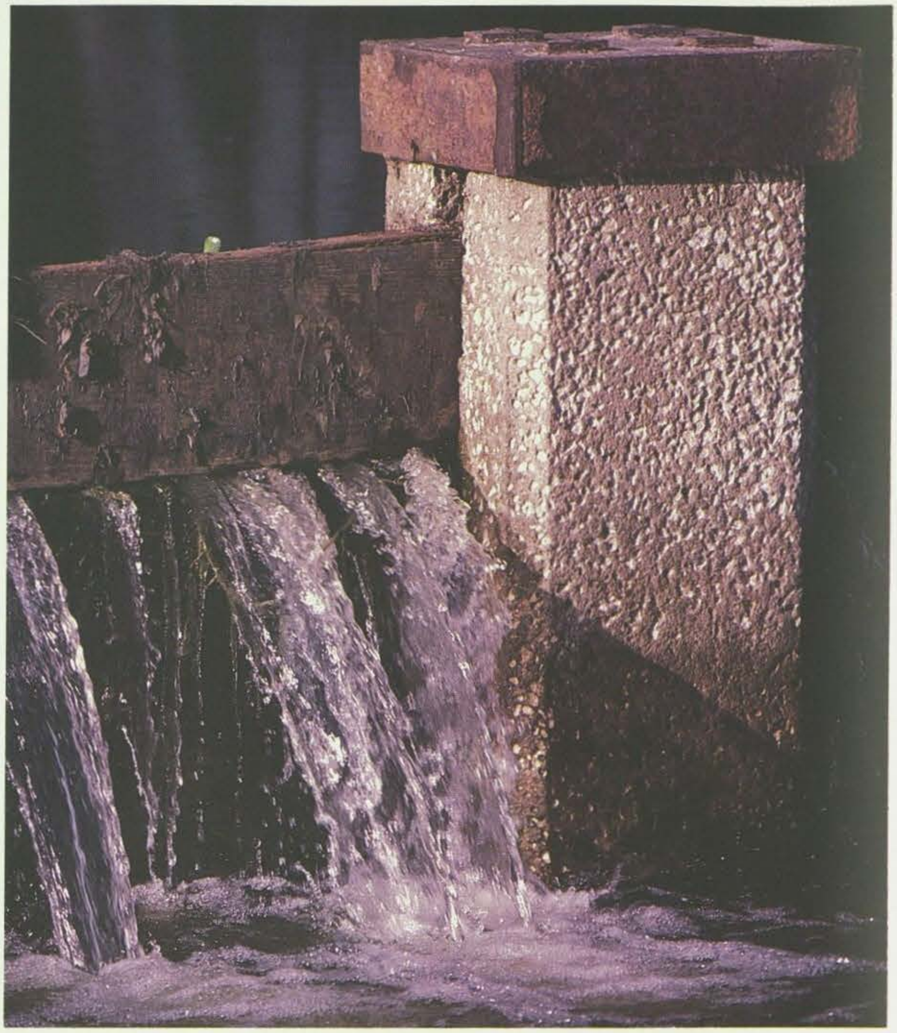
Unlike the pioneer days of our grandparents' time, when every home had its own water well, water is no longer an individual family matter. The oak bucket by the backyard well has all but ceased to exist while large Florida cities study the feasibility of building miles of pipelines to siphon water from our major rivers to meet their local human supply needs.

Since a century ago, we have also witnessed the conversion of some of Florida's lakes and streams from healthy, fish-laden, safe-to-drink waters to polluted cesspools which no longer provide a healthy place to ▷

swim or fish. Waste products from human and livestock populations have to go somewhere, and in increasing instances, into our lakes and streams is where they go. Along with sewage are other common pollutants: infectious bacteria and viruses; chemical nutrients from fertilizers; toxic substances such as ammonia, mercury and lead; and petroleum substances, to name a few.

As a result, Florida's water quality is considerably lower than it used to be, and can be predicted to get worse.

This has not gone unnoticed by Floridians, and has not been without significant public and private efforts to correct the problem. However, even in the presence of our current knowledge about modern methods of waste water treatment, for example, the high costs and great volume of material to be treated in Florida's major metropolitan centers is staggering. The end results—deterioration of water quality and loss of recreational opportunities—continue to increase faster than we can correct the problem.

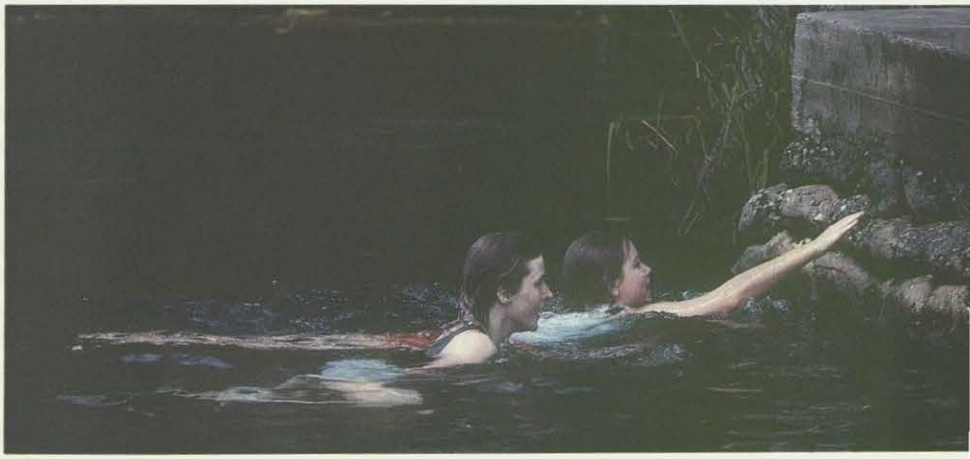


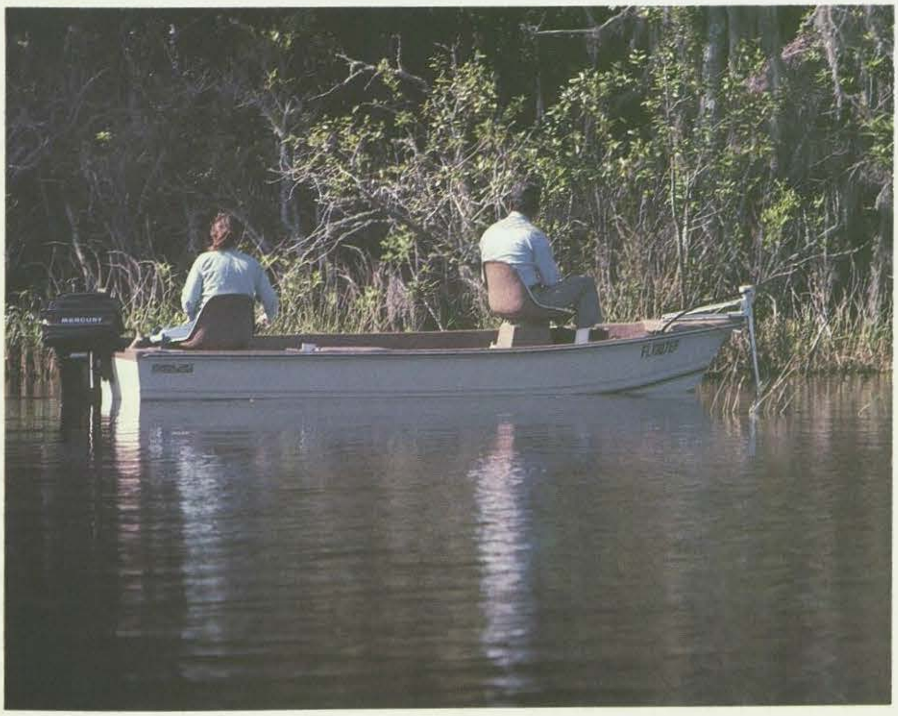
Although most people agree that a cure for the ills of the state's water is needed, there is wide disagreement about what the cure should be. There are those who say industrial uses of water should be outlawed; while others claim agriculture's uses of chemicals must be discontinued. A few emphatically proclaim that migrants to Florida should be turned away; while some say developers must be forced to pay the costs. But, Florida is not an island and cannot exist as a sole entity separate from the rest of the world. For this reason, none of these ideas will work.

Instead, what we must deal with are all the conditions facing us. We will have to continue to accommodate new residents and more development that comes with an increasing population. We cannot sensibly expect the agricultural industry to quit using chemical fertilizers and a whole cornucopia of other chemicals such as herbicides, insecticides and nematicides and still have a harvest of farm products. Neither is it feasible to expect forestry practices to cease, nor to expect mining activities to stop.

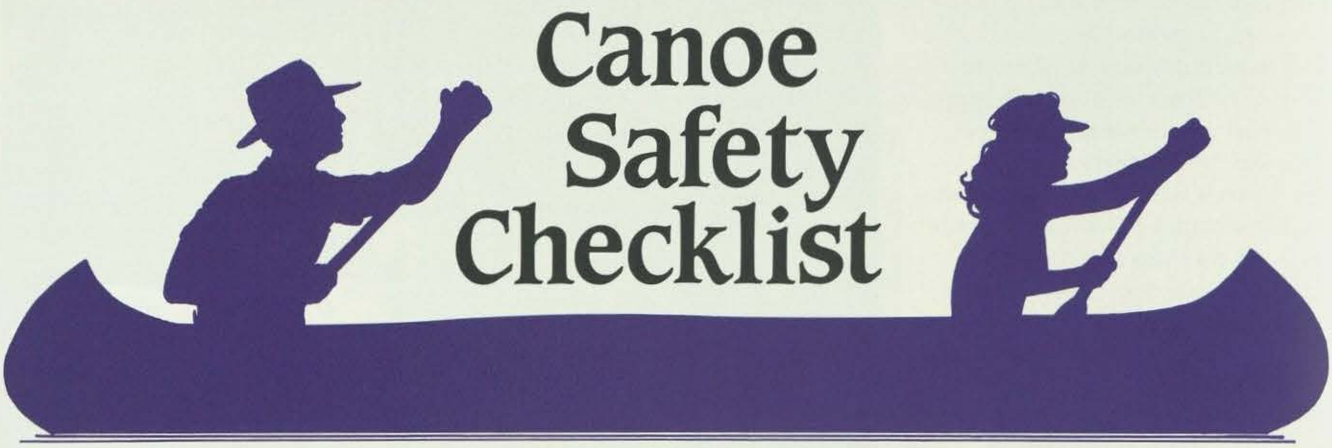
What we can do, however, is make it our personal and community project to become more informed about Florida's water in order to be more actively involved in the democratic decision-making process, and to each do our small part in taking care of it. Although we cannot do much about the wind and the rain, we can all help keep the water we have as clean and life-supporting as possible. But, there will be a price to pay for this luxury.

The future will continue to be directly influenced by a mixture of human activities and natural events. Although our present knowledge of our very miniscule part of the world indicates weather and other natural systems play the longest and most profound roles, we have never lived in a time when our own activities have so much potential to change our little peninsula so much. All that it will take for disaster to happen is to do nothing to save our water. ☐





Canoe Safety Checklist



By Tom and Joanne O'Toole

With a bright morning put-in, and late afternoon take-out some 18 miles away, we had enjoyed the river, the communion with nature, and the stop on the bank for a leisurely basket lunch. We were also amazed to see how reckless some other canoers can be, even after safety instructions.

Canoeing is an excellent means of wrapping yourself in nature's elements, and for ending a day full of satisfaction, knowing you've done something special.

This family-oriented outdoor activity has come a long way since the first Native American dugout canoes were crafted from tree trunks. History tells us that trapping, trading and early White man's exploration of North America were made feasible by birchbark canoes, another Native American invention. Today, these sleek crafts are made of rubber, aluminum, fiberglass or plastic, or even still of wood and canvas.

While canoeing is increasing in popularity, it also brings with it risks to canoeists, who often are their own worst hazards. Accidents occur regularly among those who don't seem to have the coordination, balance and dexterity to properly and successfully paddle a canoe. Then too, most accidents occur when canoeists attempt to ride waters which are more demanding than their skills, knowledge and experience can justify.

Some people claim canoes capsize too easily. Actually, it is inexperienced and reckless people who tip canoes because they don't know how to use them.

Preparation is part of the key to successful canoeing, and like other forms of outdoor recreation, the introduction starts *before* the actual activity. Safety precautions, courtesies of the river, proper behavior and lots of common sense come into play in safe canoeing.

Before embarking on any canoe adventure, ask someone familiar with the stream about its difficulties. Although most rental outfits are geared to amateurs, make sure the water you're about to enter isn't just for experienced canoeists who are able to grapple with a high, dangerous flow.

Even tame streams can be menacing when the water is up and fast too. Amateurs shouldn't risk themselves and their families in rough waters.

What's safe for amateurs? When the words "slow, meandering, pastoral or floatable" are used to describe a creek, it's a good bet it is amateur status. But when words like "turbulent, strictly for, high flow, dangerous, wilderness-type or experienced only" describe the conditions, then it's for seasoned canoeists who know how to paddle their way through trouble.

Many Florida rivers and streams don't stay in the same category year-round. Fluctuating water levels, caused by variations in rainfall, can change a pastoral float to a fast, scary ride. It can ruin a family outing, turn you sour on canoeing and can also present a potential for injury.

Although youngsters are part of the family when it comes to canoeing, parents must consider the circumstances. Exposing children to the possibility of capsizing in chilly, swift-moving water is not reflective of a concerned parent.

Safety is too often ignored. Seasoned paddlers frequently think the rules don't apply to them, and novices don't like to look like the newcomer in the group, so they let things slide too. However, these common sense safety rules and regulations need to be observed by everyone:

☐ **Have an approved emergency personal flotation device for everyone in the craft—to be worn at all times while on the water.**

☐ **Keep a fully stocked first-aid kit available in each craft.**

☐ **Be able to swim (almost every enthusiast capsizes at one time or another).**

☐ **Hold on to your craft if you capsize—most models have excellent flotation. However, stay on the *upstream* side to avoid being trapped against downstream obstacles.**

☐ **Try to float on your back with your feet at the surface of the water pointed *downstream* if you are capsized and become separated from your canoe in turbulent water.**

☐ **Paddle close to shorelines on large lakes.**

☐ **Portage (carry the canoe around) when streams and rivers become questionable.**

☐ **Be sure your shoes will not hinder swimming. Boating shoes are the ideal choice.**

☐ **Keep a safe distance between canoes traveling the same stream.**

☐ **Never canoe alone.**

☐ **Know the condition of the water. A fast-flowing, flooded stream might look exciting, but it could be extremely dangerous.**

☐ **Never stand up in your canoe when it's in the water.**

☐ **Remember that currents are always stronger than they look...always.**

☐ **Know your strengths and capabilities, but remember it is even more important to know your limitations.**

☐ **Carry basic repair materials such as gray duct tape, a sharp knife and a rubber hammer. They're valuable if you have a major problem.**

☐ **Bring one extra paddle per person. It is always a good rule of thumb to do so.**

☐ **Have a throw line in the craft or carry a throw line rescue bag.**

☐ **Carry a bailer and sponge for removing excess water from the canoe.**

☐ **Have a whistle or other hailing device on board to bring help in a hurry.**

When to canoe is whenever you decide to go. After heavy rains, and especially in the spring and summer, the water flow may be up, fast and more challenging. In dry weather, the water is lower and you might run into snags, stumps, rocks and other obstructions you won't enjoy. During weekends everyone may seem to be canoeing the very stream you've picked, and the congestion can detract from the enjoyment. If you prefer more isolation and tranquility, weekdays are your best bet.

When the weather is foul, cold or the water is running high, you're not looking at the best time for canoeing. Then too, some outfitters might be closed during these unappealing times.

Some water courses may be canoeable year-round, while others offer only seasonal floating. Paddlers, of course, have their choice—not only of where and when to go canoeing, but for how long. This outdoor adventure can be a short one-hour run or a week-long endeavor.

You don't have to invest a lot of money to get into the spirit of canoeing. If you have your own craft and gear, that's great. If not, outfitters along many Florida rivers and streams make it easy by providing virtually everything—except a guarantee you won't get wet.

In choosing your paddle, the best length is generally one that reaches your chin when its tip touches the ground. However, whichever one you find most comfortable in use is probably best.

Along many Florida streams, you can always find time for a little swimming or fishing, or perhaps hiking after lunch. That's part of the diversity and fun of being on a stream.

Regardless of where you canoe—whether putting in your own rig, or renting one—there are basic courtesies and conduct expected of you. There is also some good, everyday common sense advice:

☐ **Respect the rights of landowners, and always obtain permission before entering private property.**

☐ **Never cut or damage living trees and shrubbery.**

☐ **Be extremely careful with campfires, especially in dry seasons.**

☐ **Be absolutely certain any fire you build is *completely* out before leaving shore. Drown the fire and scatter the ashes.**

☐ **Carry litter out—all of it—and bury human waste.**

☐ **Eat high-energy snacks to maintain a level of strength.**

☐ **Try to camp at least four feet above water level.**

☐ **Store valuables in waterproof, airtight bags or containers. Carry a change of clothing in a waterproof bag too.**

☐ **Carry enough drinking water for the length of the float. You're not always guaranteed of finding it along the way.**

☐ **Notify the proper authorities, and family or friends at home, whenever you plan to enter a wilderness area or stay overnight.**

☐ **Stay to the right of the stream. It's almost the same as the rules of the road.**

☐ **Watch out for venomous cottonmouths, which often sun themselves on tree branches overhanging the water.**

In calculating your canoe trip, figure on two miles per hour under normal conditions for novices, and three miles each hour for experienced canoeists. It's always better to finish earlier than planned, than to try to paddle in after dark.

A pleasant delay on any float trip can be the thrill and excitement of seeing deer, squirrels, beavers, wild turkeys, wood ducks, owls and other native wildlife. The shorelines are often inhabited by brightly-colored song birds, and they are fun to spot. For those who want to watch or photograph birds and animals, the trip can be pleasantly prolonged.

Equipment is not always necessary, but it usually makes the trip more enjoyable and trouble-free. No matter how little or how much gear you put into your canoe, position the weight properly, and tie everything to the canoe so you don't lose it all if you capsize.

At the take-out, make sure you've arranged for a shuttle back to your car. Or, depending on the outfitter, you can have your car waiting for you.

Rich in tradition, canoeing is an outdoor sport for which an individual becomes properly skilled only through practice. Reading can give you insight, but there's nothing like doing it yourself. ☐

APRIL Was A Record Breaker

By John Waters Jr.

Records are made to be broken, and in Florida freshwater fishing during April this year, that's what happened. And the star of 1985's spring freshwater fishing season is three-year-old Seth Branch of Fernandina Beach. Fishing with a cane pole and using a cricket for bait, he caught Florida's State Record bluegill—a 2-pound, 14-ounce beauty that beat the previous record by two full ounces!

Seth was fishing with his grandfather, Hugh Buie, and his father, Mike Branch, in Buie's private pond near Lake City when the big bluegill took the cricket on April 7.

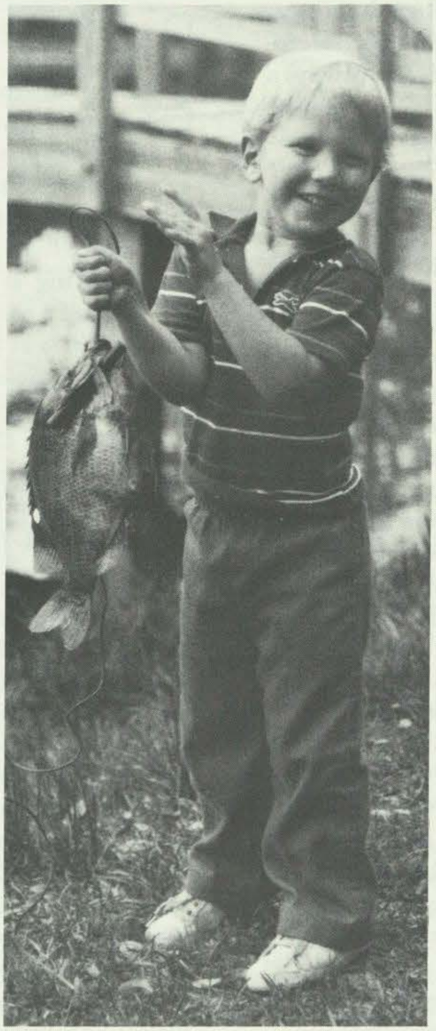
"Seth's been fishing ever since he was big enough to hold a pole," his mother, Julie Branch, says. "And this year was the first year he was big enough to bait the pole and land a fish by himself."

Buie's pond was stocked in 1978 by Commission personnel to improve fishing there, and since then, several kids have been fishing in the pond.

"Maybe someone will catch one that'll beat Seth's record," Buie said.

Another State Record was set, but this one required some changes in our rules. After having the minimum qualifying weight for the redfin pickerel set at 12 ounces since 1976, and never having anyone apply for recognition, we lowered the qualifying weight to 10 ounces for this species. This allowed Carlton L. Ingram to enter his 10-½ ounce redfin pickerel, and to become the first to be recognized for catching a State Record for this little species. His catch was in a small pond in Leon County on April 20.

Robert Joseph Carter broke the previous State Record for the flier, but only by three-quarters of an ounce. With fish under five pounds, a quarter ounce of difference is required to be counted, but Carter made the grade. He made his catch using a BeetleSpin in a small pond in Leon County April 14th.



Hugh Buie-Photograph

Three-year-old Seth Branch caught the current State Record bluegill using a cane pole and cricket for bait. The pond in which his big catch was made was stocked several years ago by Commission personnel. Seth is the youngest angler listed in FLORIDA WILDLIFE's program to recognize State Record and Big Catch freshwater fish.

A new State Record for longnose gar was caught by Evan D. Merritt, fishing in Lake Panasoffkee. His 41-pound catch took a live shiner on April 14 in this popular Sumter County fishing lake. He beat his own previous State Record (June 1981) catch for this species, which weighed 32 pounds, 4-¾ ounces. This longnose gar was also a Lake Panasoffkee fish.

In the bass category, Jimmie L. Keys landed a new State Record sunshine bass, weighing in at 15 pounds, 10 ounces. He was using a "Calhoun County worm" for bait at the Jim Woodruff Dam on the Apalachicola River in Gadsden County. He landed the monster April 20.

All totaled, April 1985 had five new certified State Records! That's almost one-fourth of the total species in FLORIDA WILDLIFE's State Record and Big Catch Program. In addition to these new record catches, a few other fish qualified for listing in the Big Catch category. This category recognizes the same 24 species as the State Record category, but only requires a minimum qualifying weight.

Since our March-April 1985 issue, a few of the minimum qualifying weights have been revised; some to make it easier to receive Big Catch recognition, others to make it more difficult. This was done after extensive study by our staff and the Division of Fisheries. Those that have been changed are listed below:

SPECIES	MINIMUM QUALIFYING WEIGHT
Sunshine bass	**14 pounds**
White catfish	**14 pounds**
Redfin Pickerel	**10 ounces**
Carp	**30 pounds**

No one can predict when the next record will be broken, but there's one thing for sure—if you don't take off and go fishing, you don't stand a chance of being one of the record breakers! □

Delicate Balance

Is there a thing of which it is said, see this is new?
It has been already, in the ages before us.

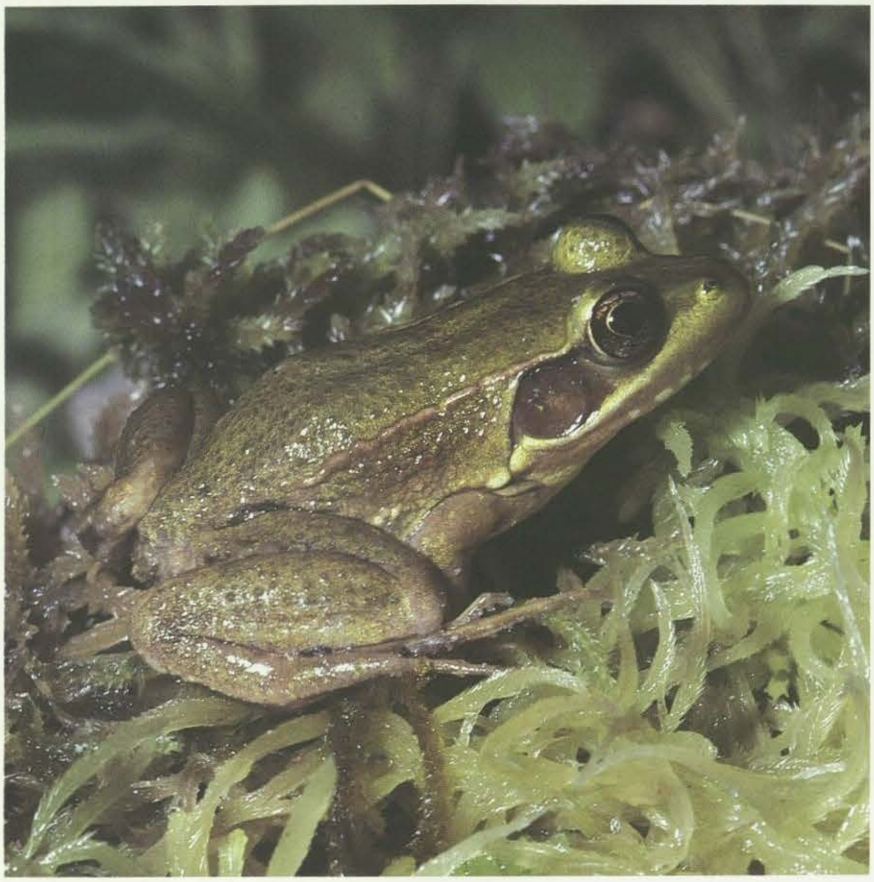
--Ecclesiastes 1:10

It was the evening of July 21, 1982, and I was monitoring calls made by the pine barrens treefrog along the lower Yellow River in Okaloosa County. I was investigating the status and distribution of this rare frog and was revisiting known breeding sites to check for continued usage. Each frog species has its own distinctive breeding call, and in four years of field work, I had learned to tune out the sounds of other frogs, and tune my ears for the telltale nasal *quonk-quonk-quonk* of the pine barrens treefrog.

But that evening, while I noted the distant calling of pine barrens treefrogs and paused to record them in my field notes, a peculiar series of *chucks* continued to echo through my mind. Again, from the creek behind me, came the strange guttural *chuck-chuck-chuck-chuck*. It sounded like the call of a frog, yet it was unlike any other call I had ever heard before.

I went to investigate, and after a few minutes of less-than-patient stalking, I found a small frog sitting in shallow water along the edge of the clear, sand-bottomed stream. It obviously belonged to the genus *Rana*, which includes the familiar bullfrog, pig frog and leopard frog, but its body was only 1-¾ inches long—much smaller than any of the other Florida members of the genus.

I slipped the creature into a plastic bag with some damp sphagnum moss and headed back to my truck. During the next two hours, I heard the same peculiar call at five more small streams, and each time I investigated, I found a small frog identical to the first one.



Barry Mansell-Photograph

Species: Bog Frog *(Rana okaloosae)*

Florida Status: Newly Found Species of Special Concern

Later, I examined the frog more closely. To each side of the back was a narrow fold of skin, giving it a superficial resemblance to the bronze frog, the southern form of the more northerly green frog. But the bronze frog does not mature and begin calling until it reaches a length somewhat in excess of two inches, and its call is reminiscent of the single *twang* of a flat banjo string. Then I noticed the hind foot. Each toe extended far beyond the webbing, much more so than in any other North American *Rana*. It's distinctive call, small size, and unique morphology of the foot let me know this was a previously undescribed species.

Since then, it has been described and named the bog frog (*Rana okaloosae*). It has now been found in 17 small streams in southwestern Okaloosa County and southeastern Santa Rosa County. All these streams flow into either the Yellow River or the adjacent East Bay River. All indications are that this species is restricred to this small area of the western panhandle.

— Paul E. Moler
Biological Scientist

Habitats & History

Tallahassee's Junior Museum Blends Nature With Our Past

Text and Photographs
By Dana C. Bryan

Many Florida communities are fortunate to have community nature centers or historical museums, and a few even have zoos. In Tallahassee, a single facility provides three. Growing steadily since it was founded in 1957, the Tallahassee Junior Museum has been recognized as one of the foremost nature centers in the Southeastern United States.

This museum is situated on 52 acres of natural wooded land at the edges of Lake Bradford and Lake Hiawatha in southwest Tallahassee. The beautiful chain of lakes, rimmed by virgin pond cypress, is an ideal location for a nature center. And the adjoining Apalachicola National Forest gives visitors a real feeling of being in a wilderness area rather than within the city limits of the state capital.

The museum's unique "natural habitat" zoo features native Florida animals. Habitat Trail winds along woodland paths and over elevated boardwalks to take visitors by nine large, fenced-in sections of natural woodlands. Many of these have year-round water frontage. All of them provide spacious and comfortable living spaces for birds of prey, waterfowl, white-tailed deer, river otters, bobcats, panthers, alligators, Florida black bears, gray and red foxes, striped skunks and raccoons. At the trail's end, a live display of snakes and a turtle and fish pond display complete the museum's native animal collection.

Except for the snake exhibit, only native species are kept, keeping with the museum's philosophy and purpose. With the large outdoor enclosures, vistors sometimes need to look carefully to see the animals, but the effort is worthwhile considering the benefits of stress-free living for the animals.

The Birds of Prey Aviary, completed in 1982, is the first stop along Habitat Trail. Containing permanently injured or otherwise nonreleasable birds, it offers close-up views of bald eagles, owls, hawks and vultures. The museum does not provide rehabilitative services for birds or other wildlife, but does provide a home for these animals. Interpretive signs in the aviary describe the injuries these raptors have suffered.

A large natural sinkhole provides a permanent pond known as Waterfowl Habitat, the next stop on the trail. Here, Canada geese and mallards are joined at night by 30 to 40 wood ducks which live along the wooded margins of the lakes.

The River Otter Habitat is the museum's newest. It was completed in 1984. The otters, "L.C." (Little Critter) and "Delta," both orphans, have become favorites of visitors and the staff. Their constant activities are a joy to see.

Another habitat offers visitors an opportunity to see panthers. Osceola and Florida are fifth-generation offspring of panthers that have been born and raised in captivity. One look at the panthers dispels many false impressions people seem to have about Florida's official state animal. *No, they are not black. Yes, they love to swim. Yes, they can climb a 50-foot tree in about five seconds.*

The Birds of Prey Aviary offers visitors a chance to see raptors. Hickle, a southern bald eagle, offers a close up view of our national bird.

The museum's newest habitat along Habitat Trail houses two river otters. This one is called L.C. (Little Critter). With the other one, Delta, their playful antics are a pleasure to watch.

Two Florida black bears, Chester and Annie, are also favorite residents along the trail. They have been at the museum since 1974. They and the museum's other captive wildlife are quite photogenic, especially in their woodland habitats. Consequently, the museum staff is always pleased to see Chester, again and again, in many newspaper and magazine articles concerning black bears. Many prize-winning photographs and works of art have included the museum's animals because of the special opportunities for close observation.

A future habitat, already funded and scheduled for completion in 1985, is for the red wolf. Wolves have been extinct in Florida for many years, but a few still may remain in the wilds of coastal Texas and Louisiana. A small population is being successfully bred in captivity, and will provide young wolves for the museum when the habitat is completed.

Other wildlife the museum hopes to display in the future includes the American bison and the elk—also vanished from the wilds of Florida. Exhibits of nocturnal animals, insects and even a nonraptor aviary are in the long-range plans. More immediately, the museum will soon start construction of an indoor aquaria and touch tanks for marine and freshwater animals.

Education and information are two of the Tallahassee Junior Museum's major purposes. Visitors find interpretive signs which provide information about the animals, as well as self-guiding booklets for the nature trails. A natural science building houses ecology exhibits, mounted bird dioramas, a large bird observation window, an observation honeybee hive, an ant colony and display cases of natural history items included in the museum's collection. ▷

An educational staff, with help from the museum's naturalist and animal curatorial staff, lead a full schedule of on-grounds and in-school classes. Approximately 30,000 schoolchildren visit the museum each year, either for unstructured visits or for specific educational programs. Guided tours through the nature trails and animal habitats, and reptile classes in the Outdoor Classroom are always popular, but they must be arranged in advance.

One look at the panthers dispels many false impressions some people seem to have about our official state animal.

A new program, however, will provide almost any group a guided visit, led by a trained volunteer docent. The museum also has a preschool program offering a variety of classes for toddlers (age 2 and one-half to 5 years old.)

A Treasure Chest program, first started in 1958, now consists of 160 large boxes. Each box is devoted to a different natural history or cultural topic and is filled with many hands-on items, plus laminated pictures and publication articles. The Treasure Chests are in great demand by teachers as aides to enrich their students' learning experience.

A year-round series of weekend family trips, led by the staff naturalist, provide field trips to nearby outstanding natural areas where geology and native flora and fauna can be viewed and studied. Weekend camping and canoeing trips provide more distant expeditions, for examples, to St. Vincent National Wildlife Refuge and Cumberland Island National Seashore.

A summer nature camp program of 16 sessions, with such themes as the Animal Kingdom I and II, Marine Biology and Oceanography, and Natural Sculpture, offer specialized educational opportunities to first- through twelfth-grade students. The older ones

The museum's two resident panthers, Osceola and Florida, are decendents of captive-bred parents. Recently, the female gave birth to three kittens, but only one of them has survived. The mother is not experienced at raising kittens, and apparently rejected them.

The gray fox is another favorite native animal which can be viewed in a special habitat at the museum. Foxes are adept at climbing trees.

especially enjoy the week-long camping trips to the Great Smokey Mountains and the Florida Keys.

The historical component of the Junior Museum is as intriguing and entertaining as its natural science. The Big Bend Farms exhibit recreates a typical turn-of-the-century north Florida farm setting—complete with garden, farm animals and authentically restored buildings. The purpose of these exhibits is to allow visitors to step back in time and catch a glimpse of life as it was in the Florida panhandle before there were modern supermarkets, automobiles and electricity.

Demonstrations of traditional crafts, such as spinning and weaving, blacksmithing, sheep shearing and syrup making, are regular features of "Spring Farm Days" and "December on the Farm." These two annual events focus on seasonal farm activities and they attract busloads of schoolchildren during the week, in addition to the general public on weekends. Despite the farm's main purpose for showing local cultural history, many visitors just come to see the cow, goats, sheep, pig, mule, turkey, geese and chickens. For many, this is their only opportunity to see farm animals close up. How many of us go through life without milking a cow, feeling sheep wool "on the hoof" or seeing newborn goats trying to stand for the first time?

In addition to the farm, there are several other historical buildings which have been relocated to the museum's grounds from their original sites. Bellevue, the Tallahassee plantation home of Princess Catherine Willis Murat (listed in the National Register of Historic Places), is one of these.

Bethlehem Missionary Baptist Church also sits here today. It was one of the first separate Black churches founded before the Civil War. Also, the one-room, wooden 1910 Concord School (which was once at nearby Miccosukee) reminds visitors of the days of slates and primers. Even the museum's admissions center is a replica of Florida's first capitol building, a simple log cabin hurriedly constructed to house the state's first legislative session in 1821.

An early transportation pavilion houses a collection of wagons (including a Studebaker) and a restored 1919 Ford Model T touring car. A favorite of all is a bright red 1924 railroad caboose which houses a Florida railroad history exhibit.

Of course, the heart of any museum is in its collections, and the Tallahassee Junior Museum owns some 10,000 objects of a cultural or historical nature. Some items are on display, but others are too fragile or valuable for handling. These are, however, carefully preserved for future study.

How many of us go through life without milking a cow, feeling sheep wool "on the hoof" or seeing newborn goats trying to stand for the first time?

Another emphasis of the museum is cultural music and dance. Several times a year (but most notably at the "Fall Music Festival" and the "Summer Swamp Stomp"), afternoon and evening concerts are held at the Outdoor Stage. Many kinds of music are performed, from folk and bluegrass to brass bands and even Caribbean steel bands. During the "Celebration of International Friendship" held each May, African and Scottish highland dancing is held, while Philippine-style marinated barbecue is served nearby.

A brief history of the museum may be valuable to ▷

The museum naturalist, Dana C. Bryan, leads family-oriented field trips to such natural areas as this one, known as the Pitcher Plant Savannah, near Sumatra.

those who would like to help their communities develop something similar.

The Tallahassee Junior Museum was originally chartered in 1957, with leadership from the Leon County Association for Childhood Education. Also, the Natural Science for Youth Foundation (a national organization which helps nature centers "get off the ground") was contacted. They provided valuable and expert advice, early exhibit materials, and in 1960, helped purchase the land where the museum is now situated. Most importantly, the Junior League of Tallahassee has been a major supporter from the start. It has paid the director's salary from the beginning through the present.

The original temporary museum location, in a downtown Tallahassee house, was popular from the start. During the first seven months, 11,000 people visited. From 1960 through 1962, a successful building drive resulted in the construction of the museum's present contemporary buildings, and a great effort by volunteers and the early board of trustees located and transported the 1880s farm structures to the new land. With the farm and its animals came even more dedication by the community to make its museum bigger and better.

In this day and age of routine funding cutbacks affecting much of the arts, humanities and sciences, it is difficult for museums to maintain existing programs, let alone expand and develop new ones. Yet in the past several years, the Tallahassee Junior Museum has increased its staff from nine to 18, and its annual budget from $200,000 to $400,000. About 90 percent of the budget comes from memberships, admission receipts, grants, special programs and major fund-raising events conducted by the Tallahassee Junior Museum Guild.

The museum enjoys a tremendous amount of community support for its programs due to an aggressive marketing and promotion philosophy atypical of many nonprofit organizations. Naturally, marketing efforts are more successful when they start with a good product, and the museum's offerings do just that.

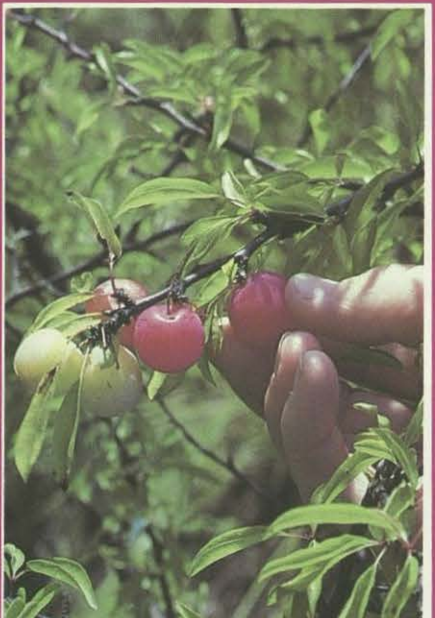
The secret of this community project's success lies mostly in the skill and dedication of its board of trustees, guild, directors and staff. Their energy, together with the undiminished enthusiasm of the public, ensures that the museum will continue to offer outstanding educational and recreational opportunities in the greater Tallahassee area. □

The 1800s vintage farm house shown here was moved to the museum grounds from where it was originally built. The old farm buildings were made possible by the early board of trustees and community volunteers, whose efforts have been very energetic since the museum was founded in 1957.

WILD PLUM JELLY

Text and Photographs

By Bill Weekes



Where homemade jams and jellies are concerned, the domestic plum is a peach of a fruit, the apple of any picker's eye, but the wild plum is a fickle fruit, ripening any time between late spring and late summer. It comes in a peck of colors, a barrel of shapes and a bushel of sizes. Some are sweet, some are tart. They have the highest food value of any fruit, with a 20 percent carbohydrate content.

Usually by midsummer, Florida's wild plums (*Prunus americana* and other species) are ready to be plucked. Throughout the United States, there are about 30 species and varieties of the native wild plum. Additional natural hybrids add to the complexity of variation and dilution of "purity." In the Northern Hemisphere there are some 2,000 variations of the main types.

Some wild plums are the size of cherries; others are big as golf balls. Wild native types are diverse in skin color, including deep vivid red, glowing orange, bluish crimson, bright red, bright yellow and dark yellow fruit colors. All are smooth-skinned, hard-pitted drupes with yellow, juicy flesh. Shapes may be globate, oval, conical or heartlike.

Ripe plums drop into one's hand at a finger's slightest provocation, and yield an elastic sensation to the squeeze of pinching fingers. Many times, ripened fruits which are still warmed by the sun, and yet untouched by the ravages of decay, can be retrieved from the ground. Most of the harvest for jelly should be ripe.

Plums that do not separate easily from the twigs are not fully ripened. However, a few of these should be included in your harvest to add a tang of taste, ▷

Ripe plums drop into one's hand at a finger's slightest provocation.

and more importantly, natural pectin, the substance that makes jellies jell.

While picking plums, exercise caution. The twigs of these scrubby trees are covered with dull, pointed thorns. The fruit itself grows singly, not in clusters as do cherries.

Jelly Recipe for Six Pounds of Plums

Six pounds of plums should make about four to five pints of crimson-colored jelly or jam. After picking, wash the fruit in cold water. Next, the plums should be placed in a pan with two cups of water, covered with a lid and placed on the kitchen stove on "high" and occasionally stirred until the mixture boils. Then, it should be left to simmer until the fruit becomes mushy. Stir occasionally while the fruit is softening up. The process shouldn't take longer than 30 minutes.

Once softened to the point the fruit easily mashes apart, the residue should be left to cool, then poured into a jelly bag which has been draped over a colander inserted in another pot. The plum mush should be left to *drip* through the jelly bag until all the juice has been collected in this second pot. This may take several hours. Letting it drain overnight may be practical.

"I don't squeeze the plums to get the juice out, however," Louise Weekes, this writer's wife, advises. She has been preserving plum jelly for years. "Squeezing the fruit clouds the jelly," she explains.

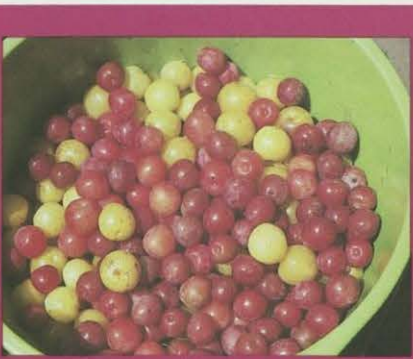
Plums may be kept in the refrigerator for a few days if a delay in preserving them is necessary. This sometimes occurs when there has been a limited daily harvest because of slow ripening of the crop.

To ensure jelling, one box of prepared fruit pectin (1-¾ dry ounces) should be used for every six cups of the cooked plum juice. To begin converting the juice to jelly, the juice should first be brought to a boil, then the pectin added. Next, 7-½ cups of sugar should be added, and the mixture stirred to avoid scorching. Bring it to a boil again, and keep it boiling for a minute before removing the pan from the heat.

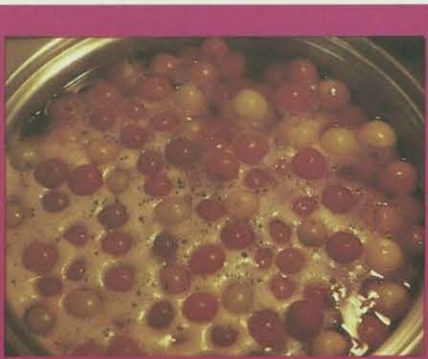
Foam should then be skimmed off the top—before the hot cooked mixture is poured into jars to jell.

"Some people scald their jars with hot water before putting juice into them, but I prefer heating the jars in an oven at 200 degrees F. for about 15 minutes," Mrs. Weekes says. Sealing can be accomplished with melted paraffin or domed lids according to package directions.

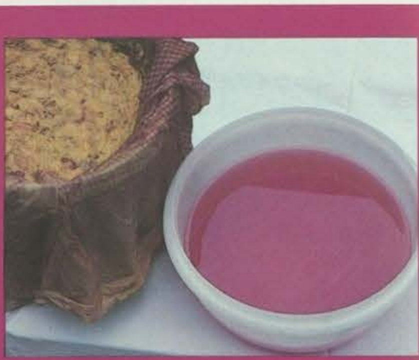
The native wild plum, made into preserves as early as Colonial times, is not commerically important in this country, but you can have a lot of fun and enjoy some great tastes using them yourself. ☐



Wild plum jelly making begins with picking a mixture of ripe and nearly-ripe fruits, either from the trees or freshly dropped fruits from the ground below. The less-than-ripe fruits contain more pectin than the ripened fruits, and this helps the jelly jell. The fruits are next washed thoroughly in cold water.



Six pounds of plums are placed in a cooking pot with two cups of water, then cooked on the stove on "high." Stir the mixture until it boils, then simmer until the fruits become mushy in texture. It takes about half an hour to cook them to this consistency. The resulting juice will become jelly.



Louise Weekes emphasizes the importance of letting the juices drain slowly through a jelly bag, and not squeezing them. "That makes the jelly cloudy," she advises. For canning of the jelly, she also recommends jars be placed for 15 minutes inside a 200-degree F. oven to sterilize them.

BAMPA'S BOY & THE TEN-POUNDER

By Sterling Dimmitt

If you fished a lake as much as 10-year-old Joel did, you just knew when you were going to catch fish. This was one of those days when he felt lucky. The boy sensed it as soon as he scooted off the seat of his grandfather's Model A.

Shivering and goose-fleshed from excitement and the chill of the early morning air, he jerkily set about putting together his three-piece bamboo fly rod. The process was automatic by then. This was the second year of fly fishing for the boy. A fly rod was a natural step up from the whippy cane poles his grandfather had first taught him to use. The grandfather was a dyed-in-the-wool bream fisherman. He waded, fishing tight line with a slender, fine-tipped pole, using red wigglers or crickets for bait.

The boy's uncle, who had left Florida for Alaska, had sent him the fly rod outfit and a booklet of instructions. Though the rig was unbalanced by modern standards, the boy had learned to get good distance and accuracy with it.

After feeding waxed green line through unwilling snake guides, Joel cinched on an eight-foot catgut leader, which he had limbered with overnight soaking. Then he had to decide: should it be a dry fly for bream or should he tie on a bass bug? Something inside him made the choice; it was to be a big, bullet-nosed, cork-bodied, feathered minnow; a high floater in a Yellow Sally color. After carefully fastening it to the leader, he spit on the big fly for luck.

Joel looked up to see that his grandfather had been watching him rig the tackle. When their eyes met, the grandfather spoke.

"Ready, Son?" he asked.

"Ready, Bampa," answered Joel.

"See you about nine. I hope you get old Mossback."

"Me too."

The boy watched his grandfather turn away and wade noiselessly into the lake, two bait cans attached to his belt and a live net, also belt-fastened, trailing behind him. The youngster waded into the lake too, feeling a surge of freedom and confidence over being trusted to fish by himself in Florida's big Lake George.

The sun was up, yet the fog kept visability to about 40 feet. But Joel could hear bass striking all along the grass beds which lined the east shore of the lake. Reaching water a little above his knees, which was about 18 inches for this slender, wiry boy, he readied himself for the first cast.

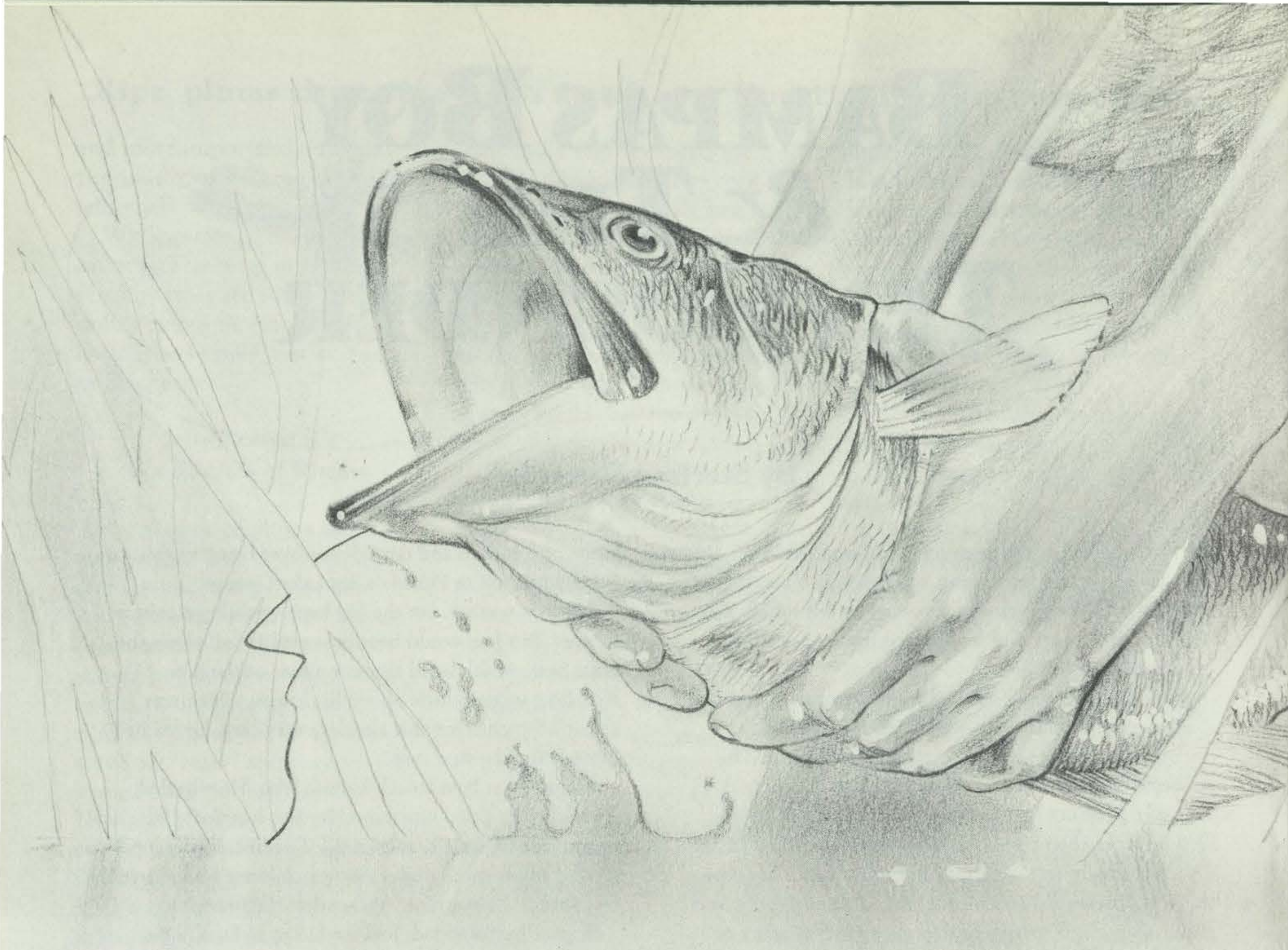
Suddenly, a bass struck behind him. He wheeled, feverishly stripped line from his reel, hurriedly false cast to put line in the air, and let go. The line, leader, and finally, the bug fell importantly in a loose wad about 20 feet short of the strike. A slapstick beginning!

A good-natured lad, Joel smiled at himself as he reeled up some of the slack line and pulled the rest through the rod guides with his stripping hand. He began working the fly ahead, methodically covering the territory wherever he saw fish rising. The bass weren't enthusiastic over the fly. Some swirled around it from irritation rather than predatory interest. Bream popped at the big bug and one warmouth actually hooked itself. This brazen little fish was hardly larger than the fly. Doubt began to crowd out the young angler's earlier devining of success.

The air had cleared and the sun poked shafts of sparkling light through the tops of the tall pond cypresses, which stood like soldiers behind the grass beds. The boy reckoned it to be about half after eight.

He thought of changing baits, and he examined the selection he carried hooked to the faded black band around his floppy straw hat. He knew he could always catch scrappy bream on a dry fly, so he reached for a little black hackle fly with a red chenille body. Something stopped his hand in midair.

Joel began working the bass bug more slowly. He even made a game of seeing how long he could let the lure lay still after it hit the water. Then a new challenge presented itself, a pocket in the grass. After a false cast to measure the range, he laid the bug right in the center. Ripples spread from the bug and dissipated, leaving it ▷



floating quietly. He moved the rod tip lightly—in imitation of a dying shiner.

Then it happened. A gaping mouth opened on the surface and inhaled the fly. Joel struck! Nothing. The bug came sailing back through the air.

He converted the miss into a backcast, then dropped the fly directly in the middle of the disturbed water. The big fish hit again. When he set the hook this time, he felt weight—the weight of a log--but the log took off.

Luckily, the fish headed for deep water, making an oxbow with the line as it sliced within 20 feet of Joel.

The boy turned to face the solid run of his adversary, watching with mounting alarm as the line slipped steadily off the little fly reel. Fingertips of his right hand against the inside of the spinning spool gave some drag against the steady pull, and fingertips of his left hand holding the line against the rod gave a bit more. But there was the six-pound-test leader to be concerned about, so pressure had to be rather light. As the last of green fly line passed through the guides, Joel knew the fish had taken out 25 yards. Now he was down to 20 yards of linen backing.

A sudden surge was telegraphed through the rod. Instinctively, Joel lowered the fragile rod tip, pointing the rod toward the big fish. Then electricity. A bass broke the surface!

Joel shoved the rod toward the bass, giving it some controlled slack. Dancing on the surface, the desperate largemouth flexed its body frantically to give shaking power to its oversized head. Joel could see his yellow bug dangling from the side of the bass' upper jaw. The hook and leader held.

The valiant fish seemed to realize it couldn't shake the hook free. Joel raised the rod again to match its strength against the steady pull from the other end. Then the bass moved parallel to the shore, continuing to take line, despite the young fisherman's efforts to slow it down. The line began to look ominously slim on the reel, so Joel waded out deeper in the same direction as the big fish, trying to regain some line.

When he had recovered a few yards, the fish turned and headed for shore, as if it had made a choice to make its last stand there. The line formed a large bow, putting great pressure on the fish. Pressure was also placed on the light leader, so the boy could only regain line slowly. As the line straightened, the fish took to the air in another jaw-shaking jump.

Then, what he had feared happened. The fish made a dash and lunged into the grass. Joel lifted the rod vertically and above his head. All he could feel was the log—no movement.

The great fish, in a last effort to escape, had lodged itself in the grass. Feeling the wear of battle, Joel pushed with aching thighs toward the grass, taking up line as he went.

When he got to where the bass had entered, he tried again to budge the big fish. No luck. There was only one thing to do. He stripped off some line so the fish could have a free run if it left the grass. Then he dropped his rod in the water and followed the line with his finger into the grass and moss. When he felt the fish's tail, the touch powered the bass ahead, but it could only go a few inches because the moss had become a wall ahead of it.

Joel felt on either side of the fish's body until he located the slits of its gill covers. As he put pressure on the gill slits, the bass opened them, allowing his fingers to reach inside. In one great movement with both hands, the boy lifted the great bass out of the water. It struggled for a moment, but worn out, quickly gave up and grew still.

Joel waded ashore and slipped the bass into the live net which was tied to his belt. Only then did he release the hook. Wanting to keep his fish alive, he returned to the water and dropped with the fish in an exhausted heap on the moss and grass. By the time he began to feel his prize struggle inside the net, he too was renewed. He retrieved his rod and waded back wet to meet his grandfather.

The grandfather had already returned and was cleaning the fish he had caught when Joel approached.

"Get any bass, Son?"

Straining, Joel held up the live net.

"Son! How did you get him?"

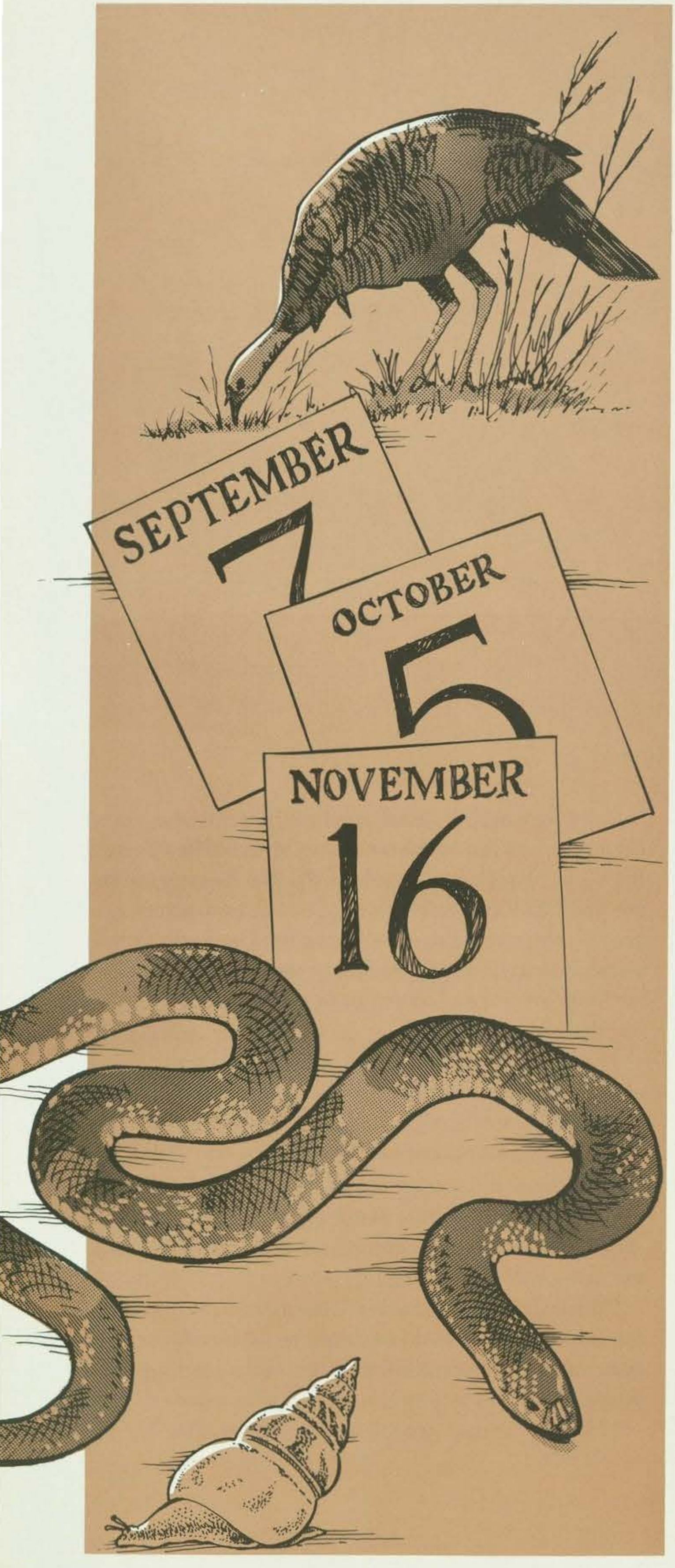
The boy didn't say. He just eased the heavy net down, studied the big fish for a moment, then opened the net—and let the fish go.

"What did you do that for?" the grandfather questioned. "He would have weighed 10 pounds or even more—you've always dreamed about catching a 10-pounder."

"I know, Bampa," was all Joel would say. ☐

It's The Law

By Dave Swindell



Each spring, the Commission establishes hunting seasons for Florida and amends the Wildlife Code to better regulate the state's fish and wildlife resources. Recent amendments which significantly affect outdoor users follow:

1. Everglades tracked vehicle users whose vehicles were "grandfathered" by previous regulations have been given a time extension to January 1988 before a reduction of engine size will become mandatory. No vehicles with tracks less than 16 inches wide will be permitted on public lands in the Everglades after 1985.

2. The use of bait for hunting is restricted to hunting in proximity to feeding stations which are continuously maintained and which have been established for at least six months. No migratory birds, wild turkeys or bears may be hunted near any bait or feed which has not been grown at the hunting site.

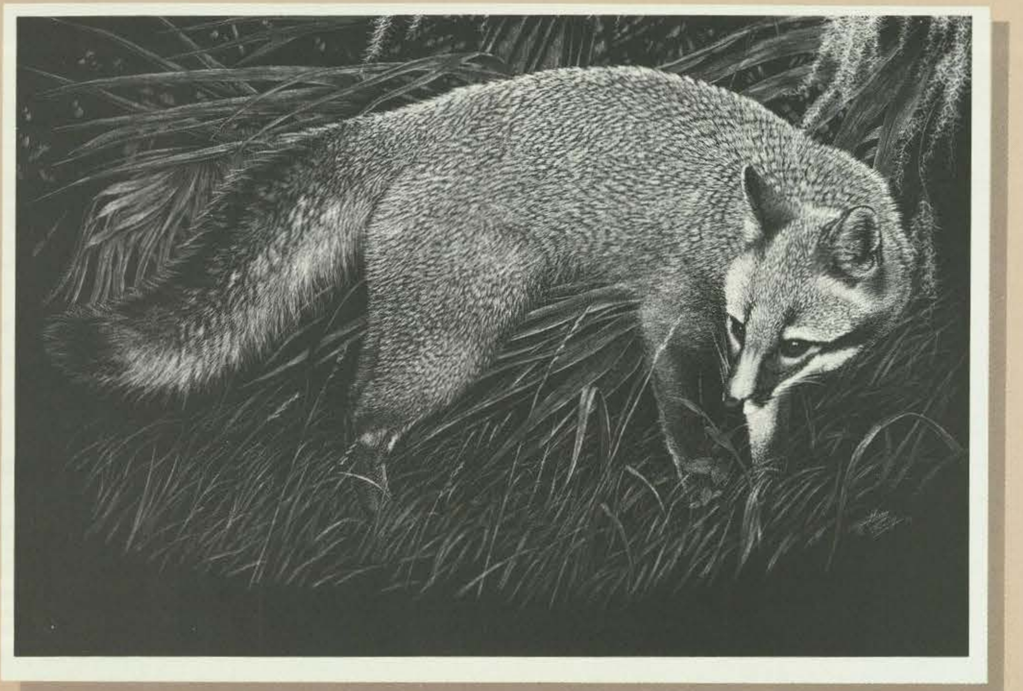
3. Details of the 1985-86 hunting seasons are available in the *Florida Hunting Handbook* (available where licenses are sold), but noteworthy changes from last year are: a common statewide opening date (November 16) for nonmigratory game; archery hunting to be allowed in the previously closed portion of Palm Beach County; and a split archery season opening September 7 below State Roads 72 and 70 and on October 5 north of this line.

4. Although earlier plans intended the opening of a new Type I wildlife management area in Levy County, late complications concerning the land purchase will prevent any hunting this year on the tract to be known as the Andrews Wildlife Management Area.

5. Wildlife and environmental areas will be established in Bradford County (Santa Fe Swamp) and Dade County (East Everglades) and hunting will be allowed there during the general hunting seasons. No special permit will be required for these areas, and regulation brochures for each area will be available later this year.

6. Declines in gopher tortoise (*Gopherus polyphemus*) populations resulted in a shortening of the open season to October 1 through January 1, with a daily bag limit reduced to two. There will be no open season in that portion of the state south of State Roads 72 and 70.

7. Changes in the official status of the Florida pine snake (*Pituophis melanoleucus imbricata*) and *Liguus* tree snails provide that a special permit is required before either may be taken. ☐



The Gray F

Perhaps no other common animal has been more loved, made a character of literature, anthropormorphized, idealized or seldom seen in the wild than the fox. Even our language has been influenced by this beautiful, graceful member of the Canine family: *Crafty as a fox. Quick as a fox. Sly as a fox. Foxy!*

Our native gray fox (*Urocyon cinereoargenteus*) occupies most of Florida, where it has existed in peaceful harmony with humankind as long as human feet have trod on our soils. Basically a shy, nocturnal creature, most of us have never seen one running free. Those of us who have will long treasure the memory of the event.

Florida artist Gregg Murray has captured the essence and nature of the gray fox in a full-color scratchboard original created especially for FLORIDA WILDLIFE. With this issue, we offer you the perfect way to help celebrate the existence of this treasured wild animal by taking advantage of our limited edition print offer. Turn the page for other important information before ordering. ▷

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When you purchase three **new** one-year FLORIDA WILDLIFE subscriptions at the regular price of $7 each, we'll give you a signed and numbered, limited edition fine art print of the gray fox shown on this issue's cover. That's all you have to do...send $21 and three new subscriber's names and addresses. (Sorry, but renewals of existing subscriptions do not count.)

These beautiful full-color prints have an image size the same as our cover, but are printed on a much larger sheet (17" x 25") for matting and framing. Also, the prints do not have the magazine's title on them, and are printed on a heavy matte-finish quality stock.

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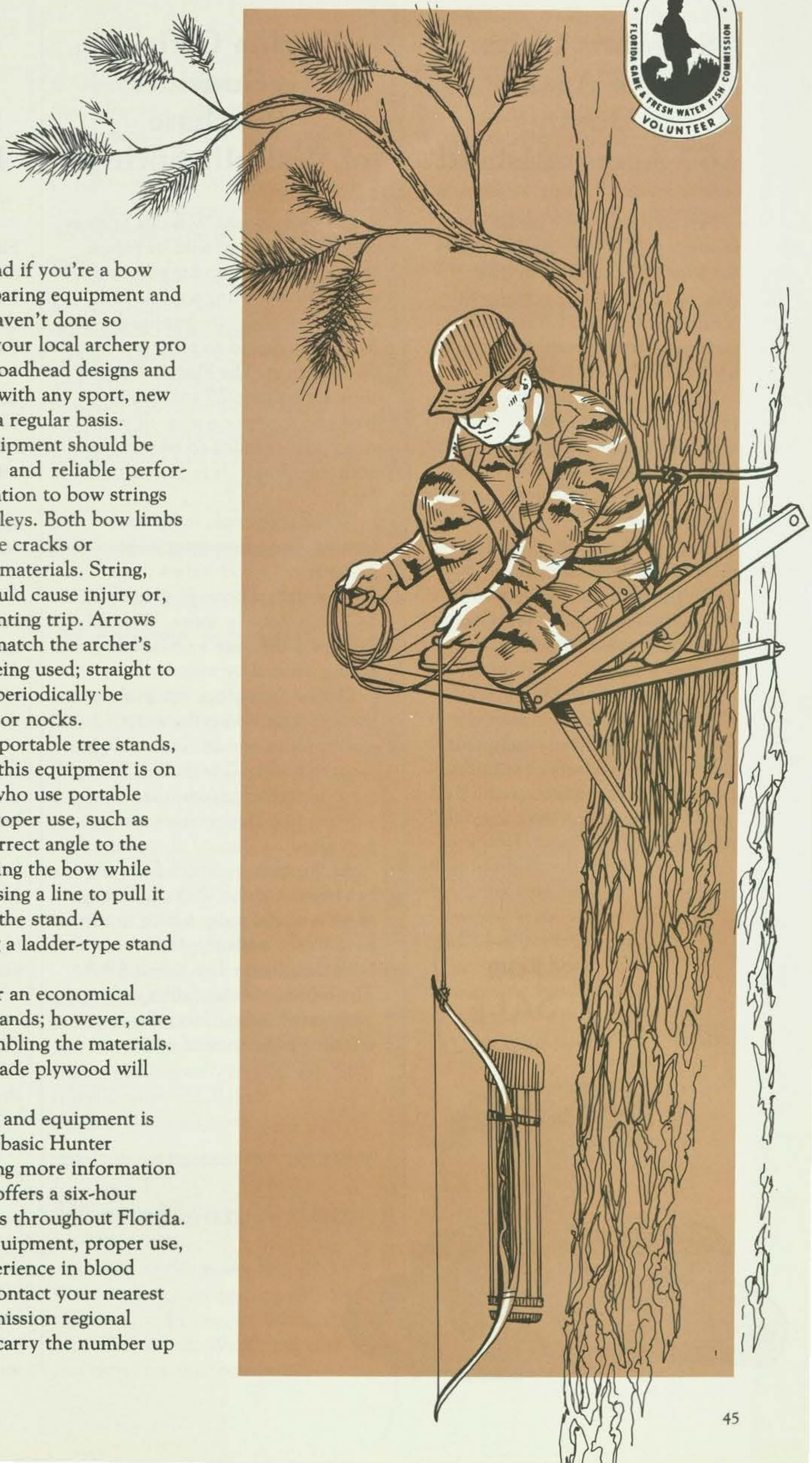
Hunter Education News

By Lt. Rudy Howell
Hunter Education Officer

Archery Season Preparation



Archery season is nearly here, and if you're a bow hunter, you should already be preparing equipment and practicing with your bow. If you haven't done so already, you may want to stop by your local archery pro shop and check out the latest in broadhead designs and other bow hunting equipment. As with any sport, new equipment is being introduced on a regular basis.

Prior to going on your hunt, equipment should be carefully inspected to ensure safe and reliable performance. Be sure to give special attention to bow strings and compound bow cables and pulleys. Both bow limbs should be carefully checked for fine cracks or separations between the laminated materials. String, cable or limb failure in the field could cause injury or, at least, ruin an otherwise good hunting trip. Arrows should be of the proper length to match the archer's draw; spined for the bow weight being used; straight to ensure accurate flight; and should periodically be checked for loose fletching, points or nocks.

Due to more hunters now using portable tree stands, the number of accidents involving this equipment is on the rise. Some injuries to hunters who use portable climbing stands are caused by improper use, such as failing to secure the stand at the correct angle to the tree; lack of a safety belt; and holding the bow while climbing into position instead of using a line to pull it up after the hunter is stationed on the stand. A common mistake made when using a ladder-type stand is failure to secure it to the tree.

Homemade tree stands may offer an economical alternative to commercially built stands; however, care must be used in selecting and assembling the materials. Use of *hardened* bolts and a high grade plywood will help ensure the hunter's safety.

An introduction to bow hunting and equipment is offered through the Commission's basic Hunter Education course. For those wanting more information on bow hunting, the Commission offers a six-hour specialty course at various locations throughout Florida. The course includes selection of equipment, proper use, bow hunting ethics and a field experience in blood trailing. For further information, contact your nearest Game and Fresh Water Fish Commission regional office. Most telephone directories carry the number up front. ☐

Conservation Update

Compiled by John Waters Jr.

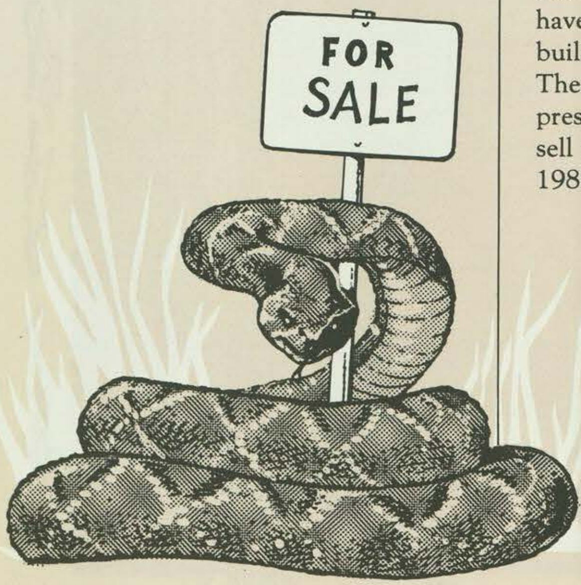
St. Johns Citizens Vote Against Buying 67 Acres of Island

Part of Rattlesnake Island was recently sold to Florida developers for $1.2 million. In turn, they offered to sell the 67 acres to St. Johns County for $1.6 million. County voters rejected the offer by a vote of 3,459 to 1,449.

Prior to making the offer, the present owners were granted zoning approval to allow construction of 90 single-family and multi-family housing units and a marina on the 67 acres.

National Park Service owns the remaining 210 acres of the undeveloped island which sits within the Intracoastal Waterway south of Crescent Beach, at Mantanzas Inlet.

The March-April 1984 FLORIDA WILDLIFE carried a story about the mostly-manmade island and the variety of wildlife living there. Fort Mantanzas, a 243-year-old Spanish fortress, also sits on the island. □



Florida Officials To Consider Purchase of Wakulla Springs

Privately-owned Wakulla Springs and 3,000 acres of wildlife refuge surrounding it is up for sale, and state officials, along with various conservationists, are hoping the land can be purchased to protect it from development. The Florida Cabinet took action June 27 to place the land and springs on a list of tracts which are intended to be purchased with state funds. It is 11th on the list.

Wakulla Springs, in Wakulla County, has a first-magnitude designation, which refers to an average daily discharge of 64.6 million gallons or more. Wakulla Springs is the state's seventh largest spring, ranked by magnitude.

One of the unique things about these springs is that the water quality there remains essentially the same as it was 50 years ago. Situated close to forested lands, the surrounding area is only sparsely populated.

At the springs, which form the headwaters of the Wakulla River, there is an old lodge where tourists have stayed since the 1930s. It was built then by the late Edward Ball. The Nemours Foundation is the present owner and has offered to sell the property since spring of 1985. □

New Programs Proposed For National Wildlife Refuges in Florida

New proposed uses for six of Florida's national wildlife refuges have been proposed by the U.S. Fish and Wildlife Service. Briefly, these new uses are recommended at these refuges:

Cedar Key: Open the refuge to daylight sport fishing from refuge beaches. Fishing from boats only has previously been allowed in waters adjacent to the refuge.

Egmont Key: To permit daylight sport fishing from refuge waters into waters surrounding the refuge.

Hobe Sound: To allow sport fishing by a limited number of anglers during daylight hours, and only from designated beach areas. The Service says daylight fishing will not affect turtle nesting activities there.

Lower Suwannee: To allow bank fishing into interior refuge waters only, except during permitted hunting seasons.

Pelican Island: To permit daylight fishing from designated areas on the island into surrounding waters, but with continued prohibition against entry to the areas used by colonial nesting birds.

Pinellas: To permit fishing from boats in waters surrounding the Tarpon Key portion of the refuge, but to disallow fishing from the shores.

The Service has said the proposed new uses will not interfere with wildlife, and in some cases, will actually enhance the original purposes for which the refuges were established. Prior to making these proposals, in-depth study of the biological soundness and compatibility with established principles of wildlife management was determined. □

U.S. House Committee Moves To Deauthorize Barge Canal

The Cross Florida Barge Canal, only partially constructed, was first begun in 1935. Work stopped in 1936. Construction was resumed in the 1960s, but was halted again, this time by President Richard Nixon. Since its initial beginning, the planned 110-mile-long project has been praised by those who want it and condemned by those who do not.

On June 28, the federal House Public Works and Transportation Committee approved a bill, which if passed by the full House, would deauthorize further construction of the canal.

Under the proposed bill, some 25 completed miles of the canal, with several locks, dams and bridges constructed overhead, will remain in their finished state. However, no further digging of the great ditch across the peninsula will be authorized.

Earlier in June, Governor Bob Graham spoke to the House Subcommittee on Water Resources, and stated "...We do not want this canal. Period." Graham also told that committee that most of the public in Florida opposes the massive project, and he said it was "time to deauthorize it and turn our attention to more productive activities."

Other public officials, including Senator Paula Hawkins, Representative E. Clay Shaw Jr., Senator Lawton Chiles and Representative Buddy MacKay have expressed strong opposition to the project. Conservationists have also been energetic long-time opponents of the Cross Florida Barge Canal.

One fear often cited is that the canal would disrupt the aquifers through which it would pass, and ultimately have serious effects on these vitally important underground freshwater reservoirs. □

Youth Finds Mole Kingsnake In South Florida

Tim Walsh, a 12-year-old living in Okeechobee, made an unusual find a few months ago—a mole kingsnake (*Lampropeltis calligaster rhombomaculata*)—a species rarely found in Florida. Apparently, this is only the second specimen documented to be found in the state.

Tim has been interested in snakes for about three years, and identified the 26-inch female specimen he caught, using one of his field guides. The mole kingsnake is a gentle nongame species which is rarely seen because it spends most of its life burrowed under debris where it feeds principally on mice, frogs, toads, lizards and small snakes. □

New Circulation Manager Appointed

Mary Beth Savage was appointed FLORIDA WILDLIFE's Circulation Manager in June. She joins the magazine staff after serving the Commission in Administrative Services for four years.

"I am eagerly looking forward to working with the magazine staff, and I hope to maintain a responsive service to all our many readers," she says of her new position.

"At this time, our circulation is growing rapidly, and this will be a challenge which I believe will make my work here very interesting. I enjoy working with people, and that is really what FLORIDA WILDLIFE is for," she adds. □

Photo Contest Ends

Judging of this year's FLORIDA WILDLIFE nature photography contest is underway, following the June 28 deadline. Watch the next two issues for the winners! □

Nongame Wildlife Newsletter Is Free

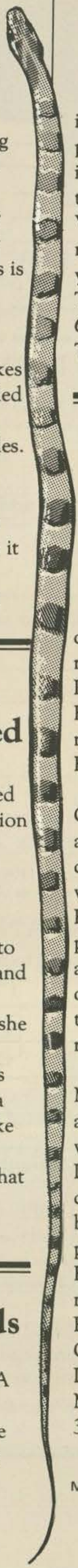
To help the public become more informed about the many issues and projects affecting nongame species in Florida, the Nongame Section of the Commission's Division of Wildlife is now publishing a newsletter, THE SKIMMER. To get your name on the mailing list, write: The Skimmer, Division of Wildlife, 620 South Meridian Street, Tallahassee, Florida 32301. □

Park Personnel Organization Gives $1,000 to Panthers

Members of the Florida Institute of Park Personnel Inc. (FIPP) recently donated $1,000 to the Panther Research and Management Fund, after learning of the need for research money to help save the Florida panther.

Dr. Allan Egbert, director of the Commission's Division of Wildlife, acknowledged the gift was "no small contribution" for an organization which has only some 600 members. FIPP is a self-governing, nonprofit professional organization of park administrators, supervisors and other personnel, who work together to improve wholesome outdoor recreational activities in Florida.

The Panther Research and Management Fund, which is administered by the Commission, was established by the 1983 Florida Legislature. Anyone desiring to contribute any amount may do so by making a check or money order payable to the Florida Game and Fresh Water Fish Commission and noting on the payment "Panther Research and Management Fund." Contributions should be mailed to Division of Wildlife, 620 South Meridian Street, Tallahassee, Florida 32301. □



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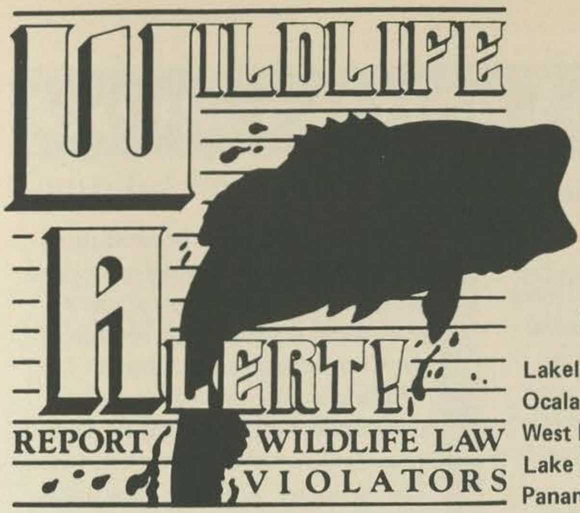

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Floridana

Night after night, according to the legend, screams pierced the darkness as a giant alligator spirit preyed on the Seminoles at the site now called North Lake Wailes in Polk County. The once peaceful village was engulfed in horror.

But Cufcowellax, a chief of great strength and courage, arose to save his people if he could. His prowess in past battles was his people's only hope.

On the northwest shore of the lake, so the legend goes, Cufcowellax spotted the evil spirit dragging its latest victim into the water. In an instant, Cufcowellax was upon the monster. Before the fight ended, the moon had disappeared and returned again. So fierce was the battle, the lake's water splashed so high and far it formed a new smaller lake nearby, and so bloody was the combat, the big lake turned red. Then, the thrashing stopped and there was silence.

A cheer roared through the village as the exhausted chief broke the surface and made his way to the shoreline.

The Indians called the lake "Ticowa," and years later, they buried Cufcowellax on its bank. The place thus became sacred to the Seminoles.

Nowadays, folks around the community of Lake Wales call the site Spook Hill because of the strange goings-on there. It seems gravity doesn't work right on that spot. Things roll uphill. Cars, balls and even water—everything seems to move uphill.

Some folks say the alligator spirit's revenge causes it; others figure it's Cufcowellax still trying to drive the White settlers away from the sacred ground. Most people think it's just an optical illusion.

But regardless of what people think, according to the old-timers in those parts, no one has ever seen another alligator in the waters of North Lake Wailes since the days of Cufcowellax.

Who knows?

—Henry Cabbage